United States Department of the Interior

BUREAU OF LAND MANAGEMENT
MEDFORD DISTRICT OFFICE
3040 Biddle Road
Medford, Oregon 97504
email address: or110mb@or.blm.gov

IN REPLY REFER TO:
1792 (116)
Ferris Bugman EA
A6614(AM:jl)

Dear Interested Public:

The *Environmental Assessment* (EA) for the Ferris Bugman Project is being advertised in the Medford Mail Tribune for a 30 day public review period beginning November 8, 2001. This EA analyzes a proposed action by the Bureau of Land Management (BLM) to thin commercial conifer stands that are in need of forest health restoration, to thin precommercial conifer stands, and to thin noncommercial woodland and shrub stands in order to reduce the hazard of high intensity wildfire and tree mortality and to provide a sustainable supply of timber and other forest products. The proposed project area is in the Middle Applegate 5th field watershed.

The primary purpose of a public review is to provide the public with an opportunity to comment on the BLM's determination that there are no significant impacts associated with the proposed action and, therefore, an environmental impact statement is not necessary.

This EA is published on the Medford District web site, www.or.blm.gov/Medford/, under "Planning Documents."

We welcome your comments on the content of the EA. We are particularly interested in comments that address one or more of the following: (1) new information that would affect the analysis, (2) possible improvements in the analysis; and (3) suggestions for improving or clarifying the proposed management direction. Specific comments are the most useful. Comments, including names and addresses, will be available for public review. Individual respondents may request confidentiality. If you wish to withhold your name and/or address from public review or from disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your written comment. Such requests will be honored to the extent allowed by law. All submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be made available for public inspection in their entirety.

All comments should be made in writing and mailed to Bill Yocum, Ashland Resource Area, 3040 Biddle Road, Medford, OR 97504. Any questions should be directed to Bill at (541)618-2384.

Sincerely,

Richard J. Drehobl, Acting
Richard J. Drehobl
Field Manager
Ashland Resource Area

Enclosure (as stated)

ENVIRONMENTAL ASSESSMENT

for

FERRIS BUGMAN PROJECT

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
MEDFORD DISTRICT
ASHLAND RESOURCE AREA

EA No. OR-110-01-009

This environmental assessment (EA) for the proposed Ferris Bugman Project was prepared utilizing a systematic interdisciplinary approach integrating the natural and social sciences and the environmental design arts with planning and decision making.

for Stephen E. Crowley

Richard J. Drehobl
Ashland Field Manager

11-05-01
Date

Public notice of the availability of this EA was provided through the BLM Medford District's central register and advertisement in the Medford Mail Tribune.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
MEDFORD DISTRICT

EA COVER SHEET

RESOURCE AREA: Ashland ACTION/TITLE: FERRIS BUGMAN

LOCATION: T.37S.,R.3W., Section 31, EA NUMBER: OR-110-01-009
T.38S.,R.3W., Sections 6, 7, & 18
T.37S.,R.4W., Sections 27, 29, 31-35
T.38S.,R 4W., Sections 1-15, 17-21, 29, 30, and 31, Willamette Meridian

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ASHLAND RESOURCE AREA
Ferris Bugman ENVIRONMENTAL ASSESSMENT
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CHAPTER I

A. BACKGROUND

In 1997, the Ashland Resource Area of the Bureau of Land Management (BLM) began the process of planning restoration projects across a large portion of the Middle Applegate Watershed within the Applegate Valley. BLM evaluated land, vegetation, and stream conditions and developed a plan that included thinning forests including oak woodlands and brushlands, reintroducing prescribed fire, and reducing sediment impacts to streams. This large landscape plan encompassed 43,380 acres of land, 24,000 acres of which are publically owned, and was called the "Appleseed Project." In May 1999, the Appleseed Environmental Assessment (EA) was released for public review. Many Applegate residents and others took the time to write lengthy critiques of the project and the EA. A common theme was that the scope of the project was too large, making it difficult for local residents to understand what was occurring on public land.

BLM has received two ACEC nominations, one Research Natural Area, and one Wilderness Study Area proposal in the Wellington Butte and Slagle Creek area. The ID Team reviewed the proposals and their recommendations are listed below in Section C.

In order to better explain the proposed project actions, this EA analyzes a portion of the larger Appleseed project. It describes and assesses the proposed actions in the Ferris Gulch, Slagle Creek, and Humbug Creek drainages. The Ferris Bugman Project area covers approximately 19,511 acres in the Middle Applegate Watershed, of which 10,085 acres are publically owned land. This EA includes a cumulative effects analysis of these actions as well as past, present and reasonably foreseeable actions in the Applegate Valley.

This document complies with the Council on Environmental Quality's (CEQ) Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (NEPA; 40 CFR Parts 1500-1508) and the Department of the Interior's manual guidance on the National Environmental Policy Act of 1969 (516 DM 1-7). The EA file is available for review by scheduling an appointment through the Ashland Planning Department at (541)618-2384.

B. PURPOSE AND NEED

An interdisciplinary team (ID Team) of resource specialists was formed to design projects that:

- Reduce the hazard of high intesity wildfire and tree mortality by restoring the vigor, resiliency, and stability of forest stands.
- Provide a sustainable supply of timber and other forest products.
- Manage developing forest stands to promote desired tree species, tree survival, tree growth; achieve a balance between wood volume production, quality of wood, and timber value at harvest.

The Ashland Field Manager also directed the ID Team to: 1) comply with the Record of Decision (ROD) for the Medford District Resource Management Plan; and 2) design projects that minimize the financial burden to taxpayers by utilizing the value of existing resources.

Three alternatives were developed for this project. A description of these alternatives can be found in Chapter II of this document.

The ID Team was also formed to evaluate the Middle Applegate nominated ACEC of 5800 acres. The nomination deals with two factors, "Importance" and "Relevance" as defined in BLM Manual 1613.

C. PROPOSED ACECs and WILDERNESS INVENTORY

In 1992, the Ashland RA received a nomination, from David Calahan, for a proposed Long Gulch Area of Critical Environmental Concern (ACEC) estimated at 967 acres. The nominated Long Gulch ACEC lies adjacent to the proposed Ferris Bugman project. On August 12, 1999, the Ashland RA received a second nomination from

David Calahan for a proposed Middle Applegate ACEC, a Research Natural Area (RNA), and/or a Wilderness Study Area (WSA) estimated at 5,800 acres. The second nomination includes the original Long Gulch nomination of 1992. Over 50% of the nominated Middle Applegate ACEC lies within the proposed Ferris Bugman project area. On October 1, 2001, the Ashland RA received a nomination from David Calahan, Barbara Kostal Calahan, Pat Kellogg, Maggie Purves, Michelle Baskes, John LaFave, Cary Voorhees, Chris Bratt, Joan Peterson, Shelly McMillin, and Joseph Vaile of Klamath Siskiyou Wildlands Center for an expanded Middle Applegate ACEC estimated at 11,200 acres that includes an area some local residents refer to as the Enchanted Forest. All of these nominations are in the EA file and are available for review.

This ID Team analyzed the nominated Middle Applegate ACECs (5,800 and 11,200 acre proposals). The ID Team recommendation is to deny both requests to establish a Middle Applegate ACEC (see Appendix S). While many of the features have relevance and importance, most of the features are associated with the Long Gulch drainage, and are not adequately represented throughout the nominated Middle Applegate ACEC.

The final decision for the nominated Long Gulch ACEC would occur within the China Well EA, which is scheduled for fiscal year 2003. However, proposed Ferris Bugman activities would not impact the nominated criteria for the Long Gulch ACEC.

BLM Oregon and California (O&C) grant lands that are managed for permanent forest production are exempt from wilderness inventory (the solicitors opinion is in the EA file) and study under the Federal Land Policy and Management Act (FLPMA). With the exception of BLM lands in Sections 12, 14, and 24 of Township 38S, Range 4W, all BLM lands in the project area are O&C grant lands being managed for permanent forest production, and are therefore excepted from wilderness inventory. The lands in Sections 12, 14, and 24 do not constitute enough acreage to be considered for wilderness inventory as the size criterion for wilderness is clearly lacking.

D. CONFORMANCE WITH EXISTING LAND USE PLANS

The proposed activities are in conformance with and tiered to the *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines* (USDI, USDA 2001) and the *Medford District Record of Decision and Resource Management Plan* (RMP) (USDI 1995b). These Resource Management Plans incorporate the *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl and the Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl* (NWFP) (USDA and USDI 1994). These documents are available at the Medford BLM office and on the Medford BLM web site at <http://www.or.blm.gov/Medford/>.

E. RELATIONSHIP TO STATUTES, REGULATIONS, AND OTHER PLANS

The proposed action and alternatives are in conformance with the direction given for the management of public lands in the Medford District by the Oregon and California Lands Act of 1937 (O&C Act) and the Federal Land Policy and Management Act of 1976 (FLPMA).

F. DECISIONS TO BE MADE ON THIS ANALYSIS

The Ashland Resource Area Field Manager must decide:

- Whether or not the impacts of the proposed action are significant to the human environment beyond those analyzed in other tiered documents as listed above in Section D. If the impacts are determined to be insignificant, a Finding of No Significant Impact (FONSI) can be issued and a decision implemented. If any impacts are determined to be significant to the human environment, then an Environmental Impact Statement must be prepared before the Manager makes a decision.
- Whether to implement any of the action alternatives or defer to the no action alternative

G. ISSUES OF CONCERN

The following issues were identified throughout the scoping process. All of the issues were reviewed by the ID Team. Not every issue is analyzed in detail by this EA.

There was an open process for identifying and addressing issues related to the action alternatives of this project during scoping for the Appleseed Project. Invitation for participation of Federal, State, Local agencies, and interested parties was accomplished by letters, phone calls, field tours, and individual meetings. The EA case file contains documentation of the scoping process.

The following issues were identified from public comment and the ID Team throughout the scoping process. All issues were reviewed by the ID Team. Issues that directly relate to the action alternatives, including the proposed action, were analyzed in detail.

1. Dense Stands/Forest Health - Many of the stands in the area, both conifer and hardwood, are overly dense. Dense stands are not vigorous (i.e., slow growth rates, too much competition for water and nutrients, susceptible to insects and drought) and constitute a fire hazard.
2. Landscape Fire Hazard - With effective fire suppression of low intensity fire, the amount of vegetation (fuel loading) and consequent fire hazard continues to increase.
3. Threatened & Endangered and Special Status Plant Species - Many special status species are known to be in this area including *Cypripedium* orchids and *Fritillaria gentneri* (Gentner's fritillary), a federally listed endangered species.
4. Threatened & Endangered and Special Status Animal Species - Many special status species are known to be in this area including the Siskiyou mountains salamander, some bat species, and the northern spotted owl, a federally listed threatened species.
5. Fisheries - The proposed action could impact water quality and/or anadromous fish.
6. Soils - The proposed action could impact soil, increase erosion, and affect the water resources.
7. Impacts to Residents - Harvesting would have a short-term impact on local residents by increasing noise from helicopter operations and increasing traffic on existing roads.
8. Access - Roads (long-term access) are needed for long-term management. Roads intensify interactions with hunters, local residents, and off-highway vehicles. Roads also could impact the water resources, and potentially increase the abundance of noxious weeds in the watershed.
9. Invasive, Nonnative Species - Activity and disturbance in an area increases the spread of non-native species, such as star thistle, in open environments of the project area.
10. Cumulative Effects - These are the overall effects of this project, along with other federal and non-federal projects, on the Applegate watershed and its resources.
11. Wildlife - Overall reduction of snags and forest stand canopy closures over large landscapes would reduce habitat for some wildlife species. Logging operations would result in localized, short-term noise disturbances affecting wildlife (e.g., big game and nesting birds).

CHAPTER II
ALTERNATIVES

A. INTRODUCTION

This chapter describes the proposed action and an alternative to the proposed action. In addition, a "No Action" alternative is presented to form a base line for analysis. This chapter also outlines project mitigation which is designed into the alternatives. The mitigation or Project Design Features (PDFs) are included for the purpose of reducing or eliminating anticipated adverse environmental impacts. Analysis supporting the inclusion of PDFs can be found in the appendices of this EA and Appendix D and E of the RMP.

The proposed action is designed to meet the purpose and need of the RMP, the project objectives outlined in the Middle Applegate Watershed Analysis (pages 83-95) and incorporates the best management practices outlined in the RMP (pages 149-177).

B. ALTERNATIVE 1: NO ACTION

Under the "no action" alternative, no vegetation management projects would be implemented; there would be no mechanical thinning, hand thinning, or prescribed burning projects. No roads would be constructed, improved or decommissioned (transportation management).

C. ALTERNATIVE 2: PROPOSED ACTION--VARIABLE VEGETATION PRESCRIPTION WITH TRANSPORTATION MANAGEMENT

This alternative proposes to thin commercial conifer stands (1,856 acres) that are in need of forest health restoration, to thin precommercial conifer stands (360 acres), and to thin noncommercial woodland and shrub stands (1,537 acres) with an intent to fragment existing continuous and heavy fuels in a high wildfire risk and hazard area. Vegetation thinning of precommercial and noncommercial stands would be accomplished by using mechanical techniques of cutting and chipping, such as the slashbuster, and/or using hand crews with chain saws. This action would implement transportation management objectives which would construct new roads, amend the M-2000 Right-of-Way and Road Use Agreement with Indian Hills, amend the M-660 Right-of-Way and Road Use Agreement with Boise Cascade Corporation. The action would also improve some existing roads, close some roads to public access, and decommission some for roads which are no longer needed. Details of this action alternative are listed in Appendix A. The following PDFs apply to the Proposed Action.

<u>Transportation</u>

All new roads, closed roads, and decommissioned roads would be closed to Off Highway Vehicle (OHV) use except for administrative and emergency use. OHV road closures proposed to protect resources are consistent with the existing OHV strategy and 43 CFR Part 8340.

When new roads pass through areas that are visible from major roads and other important sites, efforts would be made to minimize the visual impact by; keeping the road narrow, end-hauling any excess material, and reserving additional trees below the road that would screen the view of the road.

Slash from road construction would be windrowed at the base of the fill slope to catch sediment during the first wet season. Where feasible, the running surface would be out sloped with rolling water dips. Fill slopes and fill shoulders would be seeded with native mix or other approved seed mix. Grade

changes during road layout and design would occur to minimize accumulation of road drainage which may create unnaturally high peak flows in ephemeral and intermittent streams. New roads would be gated or blocked during all seasons to passenger vehicles except for authorized use. To reduce the potential for erosion, all new permanent roads would be surfaced with rock.

Road construction would occur during dry conditions (usually May 15 to October 15) in order to reduce the potential for soil erosion and degradation of water quality. However, it is sometimes necessary to construct roads during the fall or spring when soil moisture is optimum for compaction. This also helps to prevent fill settlement and cracking. All construction activities would be stopped during a rain event of 0.2 inches or more within a 24-hour period. If on-site information is inadequate, measurements from the nearest Remote Automated Weather Station would be used. Construction activities would usually not occur for at least 48 hours after rainfall has stopped or on approval by the Contract Administrator.

Short temporary roads, referred to as operator spurs, may be needed in a few instances. The length of operator spurs normally varies between 100 feet and 500 feet. They would be natural surfaced roads that would be constructed, used, and decommissioned during the dry season of the year (usually June 15 to October 15).

Transportation Summary for BLM Roads

Total miles of BLM controlled roads before the project:	=	18.8	miles
Proposed new road construction:	=	7.1	miles
Proposed decommissioning of existing roads:	=	7.5	miles
Previously decommissioned roads:	=	0.3	miles
Total miles closed roads:	=	7.8	miles
Total miles of roads opened after the project:	=	10.3	miles

D. ALTERNATIVE 3: VARIABLE PRESCRIPTION WITH NO TRANSPORTATION MANAGEMENT

Alternative 3 is the same as the Proposed Action (Alternative 2) except there would be no change to the existing transportation network and the thinning acres would be reduced. The acreage of commercial conifer stands would be reduced to 1,195 acres; the pre-commercial thinning would be reduced to230 acres; the non-commercial thinning of hardwood and brush stands would be reduced to 920 acres. Details of this action alternative are listed in Appendix A.

E. PROJECT DESIGN FEATURES (PDFs)

The following PDFs apply to the Proposed Action or to the Alternative to the Proposed Action.

1. Roads and Helicopter Landings

Road Decommissioning. Some existing roads would be decommissioned as listed in Appendix A. Types of decommissioning are as follows:

- Natural Decommission - Some roads are presently well drained and have vegetation growing on them. They may also have trees and brush encroaching from the sides and trees that have fallen across them. Sections of these roads would be allowed to decommission naturally but may include some selective ripping, removal of drainage structures, construction of water bars and barricades.

- Mechanical Decommission - Roads would be decommissioned mechanically. This usually includes ripping, removing drainage structures, seeding and/or planting, mulching, constructing water bars and barricades.

Helicopter landings. Helicopter landings on BLM land would be treated to reduce soil erosion. Treatment of the running surface would be dependent on site conditions and would include one of the following:

- Subsoil/till or rip, then mulch and seed with native grasses or other approved seed.
- Surface with durable rock material.
- No treatment may be necessary where natural rock occurs

Fill slopes of helicopter landings would be seeded with native grasses or other approved seed mixes and mulched except where rock occurs.

Hauling Restrictions. A seasonal hauling restriction would be required on natural surfaced (dirt) roads during the wet season (usually October 15 to May 15). This would protect the road from damage and decrease the amount of sedimentation that would occur. Some variations in these dates would be permitted dependent upon weather and soil moisture conditions of the roads. Refer to Appendix A for all hauling seasonal restrictions.

Rock Surfacing and Quarries. Rock would be used to stabilize and minimize erosion on selected roads and landings. Rock would be obtained from one or more of the following existing quarries which are located in SW1/4 Section 8, T38S, R3W; SW1/4 Section 27, T37S, R4W; and NW1/4 Section 31, T38S, R4W.

Dust Abatement. Dust abatement would provide driver safety and protect the road surface by stabilizing and binding the aggregate road surface. Water, lignin, magnesium chloride, road oil, or Bituminous Surface Treatment (BST) would be used.

Road Maintenance. Roads would be maintained on a long term basis. Minor improvements and design changes may be needed to stabilize and correct conditions that are causing erosion or unsafe situations.

Road Use Agreements. Existing road agreements for access are between private companies and BLM. Road use agreements M-660, M-2000, and M-800 would be used for access to BLM land.

2. Range

The Billy Mountain Allotment #20203 is located within the project area. Livestock preference is for 129 cattle from 4/16 to 6/30. Proposed new roads and increased access would aid grazing management and maintenance of rangeland improvements.

Cattleguards, gates, and fencing may be needed to prevent cattle from accessing County roads. Existing fences would need to be protected from logging activity by felling away from fences. Care would be taken to protect rangeland improvements in the fire hazard reduction units. Temporary electric fencing may be needed to protect grass and seedlings during establishment.

3. Harvest and Logging Systems

All ground based logging, cable logging and loading equipment would be cleaned prior to operation on government land to prevent the spread of noxious weeds. Only logging systems which meet all of the project design features would be used in these projects.

All landing locations would be approved by BLM. No landing would be located within 180 feet of a stream. Landing size would be kept to a minimum. Normally, this would be less than ¼ acre for tractor and cable units, and less than one (1.0) acre for helicopter units. No helicopter landing construction would occur within ¼ mile of the known mine adits.

All harvest units would be yarded in such a way to protect the surface soil and maintain forest productivity.

Directional tree felling away from draw bottoms would be practiced. Skyline and tractor yarding would be avoided in draw bottoms.

Maximum operational suspension would be practiced to minimize disturbance to the forest floor. Minimum yarding widths would be utilized to assure silvicultural objectives are met. Trees would be felled towards the yarding corridors.

For all tractor yarding, skid road locations would be approved by BLM. Skid road locations would avoid ground with slopes over 35 percent. Maximum unit area in skid trails would be less than 12 percent. Trees would be felled toward the skid trails. Existing skid roads would be utilized when possible. All skid roads would be water barred to BLM standards after use. Tractor yarding would normally take place when soil moisture is less than 20 percent at a depth of four inches (usually June 15 to October 1). Every effort would be made to maintain canopy cover over skid roads.

Noise disturbance to local residents would be partially mitigated by regulating operating hours, days, and seasons through portions of the project area. Generally, any helicopter logging closer than ½ mile of a residence would be restricted to an operating period of 8:00 a.m. to 5:00 p.m., Monday through Friday. Any helicopter logging located ½ to one (1.0) mile from a residence would be restricted to an operating period of 6:00 a.m. to 6:00 p.m., Monday through Saturday; and no operating time restriction would be enforced when helicopter operations are greater than 1.0 (one) mile from a residence.

4. Fuels Treatment

To minimize loss in soil productivity and surface erosion, low intensity underburning would be planned. Fuel management activities occurring within riparian reserves would meet the Aquatic Conservation Strategy (ACS).

Future maintenance of all treated areas would maintain low fuel loadings and fire-dependent species. Underburning (conifer stands) and broadcast burning (woodlands and grasslands) would be the preferred methods for maintaining these areas.

Prescribed burning operations would follow requirements of the Oregon Smoke Management Plan and the Department of Environmental Quality Air Quality and Visibility Protection Program. Prescribed

burning includes underburning, broadcast, and handpile burning.
Measures to reduce the potential level of smoke emissions from proposed burn sites would include completing mop up as soon as practical after the fire, facilitating quick and complete combustion of smaller fuels by burning them with lower fuel moisture, minimizing consumption and burn out time of larger fuels by burning them at higher fuel moisture, and covering hand piles so that burning is possible during the rainy season when there is a stronger possibility of atmospheric mixing and/or scrubbing of smoke.

5. Mechanical chipping and thinning on precommercial conifer stands and noncommercial woodland and shrub stands.
In order to provide for escape, hiding, thermal, and nesting cover for a variety of species, 15-20% of the proposed area will be left in an untreated condition within the noncommercial woodland and shrub stands. These deferral reserves would be at least three acres in size and covering a variety of vegetative conditions.

To minimize loss in soil productivity and surface erosion, the maximum slope for mechanical operations is 50% (short pitches less than 300 feet) with an average unit slope of less than 35%.

Old skidroads would not be opened, or driven on without the approval of the authorized officer. Cut material or slashbuster material will be placed along old skid roads or jeep roads that are used. Old skidroads would not be treated near the intersections with system roads in order to provide a visual screen and discourage vehicular access.

6. Special Status Plant Species, Species to be Protected Through Survey and Manage Guidelines, and Protection Buffer Species
Special Status Plant and Animal Species are species that are Federally listed, proposed, or candidates for listing by the U.S. Fish and Wildlife Service, including species the BLM considers Special Status Species (i.e. sensitive species, assessment species, tracking and watch species). A list of the Special Status Plant List and their BLM status is included in the Appendix.

Bureau Sensitive species and their habitats would be managed, protected and conserved so that the proposed action would not contribute to the need to list these species.

<u>The following actions would be taken to protect special status species in the project area:</u>
Fritillaria gentneri: There is one occurrence within the proposed harvest unit Bugman #15, T38S, R4W, SEC 13, and one occurrence on the edge of the proposed burn unit in T38S, R3W, SEC 7, NW1/4. Both sites would receive a 150 feet radius buffer.

Arabis modesta: The one known occurrence within the proposed harvest unit Slagle #16, T38S, R4W, SEC 5, would receive a 100 to 150 feet variable radius buffer.

Clarkia heterandera: The one known occurrence within the proposed harvest units Ferris Gulch #15 and #16, T38S, R4W, SEC 18, would receive a 100 to 150 feet variable radius buffer.

Cypripedium fasciculatum: Known sites exist within the following units: Bugman #6, T38S, 4W, SEC 1

(3 sites), Bugman #8, T38S, 4W, SEC 12 (3 sites), Bugman #10, T38S, R3W, SEC's 7 &12 (5 sites), Bugman #11, T38S, R3W, SEC 7 (3 sites) Bugman #13 & #14, T38S, R4W, SEC 13, T38S, R3W, 18 (11sites), Bugman #15, T38S, R4W, SEC 13 (2 sites), Ferris Gulch # 4, T38S, R4W, SEC 29 (1 site), Slagle #3, T37S, R4W, SEC 33 (1site), Slagle #8, T38S, R4W, SEC 33 (2 sites), and Slagle #19, T38S, R4W, SEC 4 (2 sites). In addition there are three sites in or on the edge of the proposed burn units in T38S, R4W, SEC 9 and one site in the proposed burn unit in T38S, R4W, SEC 1. These sites would receive a 100 to 150 feet variable radius buffer.

Festuca elmeri: The three known occurrences within the proposed harvest unit Slagle #8, T38S, R4W, SEC 9 and T38S, R4W, SEC 3 , and the five known occurrences in the proposed burn unit in T38S, R4W, SEC 9 would receive a 100 to 150 feet variable radius buffer.

Meconella oregana: The one known occurrence within the proposed harvest unit Slagle #16 , T38S, R4W, SEC 5, would receive a 100 to 150 feet variable radius buffer.

Mimulus bolanderi: The two known occurrences in the proposed burn unit in T38S, R4W, SEC 9 would receive a 100 to 150 feet radius buffer.

Sedum oblanceolatum: There is one known occurrence within each of following proposed harvest units,Bugman #1, T37S, R3W, SEC 31, Bugman #5, T38S, R3W, SEC 6, Bugman #7, T38S, R4W, SEC 1, and Slagle #8, T38S, 4W, SEC 9, one known occurrence within the proposed burn unit in T38S, R4W, SEC 12, and two occurrences in the proposed burn unit in T38S, R3W, SEC 7. These sites would receive a 100 to 150 feet variable radius buffer.

Bryoria tortuosa: The 13 occurrences in the following proposed harvest units; Bugman #12, T38S,R3W, SEC 7 (1site), Bugman #6, T38S, R4W, SEC 1 (1 site), Ferris Gulch #10, T38S, 4W, SEC 19 (1 site) Ferris Gulch #13, T38S, R4W, SEC 19 (5 sites), Ferris Gulch #17, T38S, 4W, SEC 20 (1 site), Ferris Gulch #8, T38S, R4W, SEC 30 (2 sites), Slagle #3, T37S, 4W, SEC 33 (1 site), and Slagle #12, T38S, R4W, SEC 33 (1 site) and the one occurrence in the proposed burn unit in T38S, 4W, SEC 7, NE1/4. These sites would be receive a 100 feet radius buffers.

Dendriscocaulon intricatulum: The three occurrences in the following proposed proposed harvest units; Bugman #6, T38S, R4W, SEC 1 (1 site) and Bugman #12, T38S, R3W, SEC 7 (2 sites), would receive 100 feet radius buffers.

Siskiyou Mountains salamander: Protect two known sites in Ferris Gulch. Any habitat found to be occupied, would be protected by 150 feet no treatment buffers around the identified habitat.

Great gray owl: Protect the one known nest. This site would receive 1/4 mile protection zone (approximately 125 acres). Designate a 1/4 mile protection zone around any additional great gray owl nest sites found before the sale date. A seasonal restriction would be in effect from March 1 through July 15 for any treatment activities and hauling within 1/4 mile of active nest sites. Provide no-harvest buffers of 300 feet around meadows and natural openings.

Goshawk: There are currently no known goshawk sites. Any identified northern goshawk nests or

activity centers that are located would receive no treatment buffers of approximately 30 acres.

Pacific mountain salamander (PLST): Two PLST sites have been located in the project area and will be protected by 150 feet no-treatment buffers around the identified habitat. Any additional habitat found to be occupied would also receive this protection.

Thompson's big-eared bats: Protect known bat roosting, maternity, and hibernacula sites, including caves, mines, wooden bridges, and old buildings. There are two known maternity colonies of Thompson's big-eared bats. All known mine sites would usually have a 250 feet protection zones. A seasonal restriction on harvest activities and road construction that would disturb the two maternity sites between November 1 through September 15 to protect the bats during reproductive and hibernation periods.

- The proposed road on the Ferris Gulch side would be built on the other side of the ridge from a known adit in order to minimize microclimatic disturbance to bats. Close the road to public vehicle use to minimize disturbance to the bats.
- On the Ferris Gulch side, the road spur leading to one mine site would be decommissioned and blocked. Also on the Ferris Gulch side, a grate would be installed in the entrance of the one mine adit to minimize potential disturbance to bats. The second mine is an active placer claim. This adit would be grated if it is determined that it does not impact the claimant.
- To minimize disturbance to bats, seasonally restrict (Nov.1 to Sept. 15) operations for a ¼ mile distance from known bat caves. Work periods would be extended if bats were determined not to be using the adit.
- Mine entrances would be protected from smoke through a no-burn restriction in the immediate air sheds around the mine entrances.

7. Wildlife

Riparian reserves would help provide refugia and travel corridors for special status and other wildlife species. Where possible, protect snags in riparian reserves by buffering so they can be retained rather than felled as OSHA hazard trees.

Two areas outside of riparian reserves in T38S R4W Sec 1 and T37S R4W Sec 33, have been identified as important wildlife connectivity corridors and have prescriptions designed to retain important habitat characteristics for this function. Treatment would include minimum canopy closure of 60%; retain a minimum of four 17 inches DBH or larger snags per acre, if available; existing understory brush would not be cut; retain all hardwoods larger than 10 inches DBH.

When operationally possible, saw work would not be done in non-commercial hardwood and brush stands from April to July to mitigate disturbance of nesting birds.

Wildlife Trees and Dead and Down Material. Reserve a minimum of two snags greater than 17 inches DBH per acre where possible. Retain and protect, where possible, large, broken-top trees and snags.

Threatened/Endangered Wildlife. - Spotted Owl

- Reserve from harvest the designated 100 acre cores for northern spotted owl sites which were designated as known sites on 1994.

- A seasonal restriction would be placed on harvest activities within 1/4 mile of the center of activity for the owl sites and any new pairs found in the project area. This restriction would be in effect from March 1 through June 30 for disturbance activities, such as hauling, and from March 1 through September 30 for removal of habitat within the restricted area. This restriction could be lifted on an annual basis if protocol surveys by the BLM indicate that the site is not reproductive in a given year.

8. Cultural Resources

Cultural sites would be protected to retain their cultural value. If additional sites were located, these also would be protected.

9. Invasive, Nonnative Species

To minimize the spread of weeds, vehicle movement (except for emergency or authorized administrative traffic) on gated and newly constructed roads would be limited to the dry season except on roads where alternative seasons of use are required to implement the project. Seeding of native grasses and/or adapted grasses on disturbed soil (e.g., new road construction, road ripping, log landings, prescribed burns, etc.) would be required as needed.

Canada thistle, star thistle, and bull thistle infest roadsides in a few locations in the project area. To reduce the existing population, the Ferris Bugman Project incorporates the following control treatments: insect release as bio-control, weeding by hand, and using fire to burn plants before seed release. As a last resort, additional treatment with herbicides (as outlined in the Medford District's Integrated Weed Management Plan and EA #OR-110-98-14) would occur. The areas lacking native seed bank would be seeded with native grass. Unit N14 and N15 are broadcast burns in Oak woodlands for the purpose stopping the spread of yellow starthistle. Burning these areas three (3) to four (4) times would eliminate the seed source. Handpulling of these areas would occur if burning were unsuccessful.

Where roadside patches of noxious weeds cross Riparian Reserves, star thistle and bull thistle would be hand-pulled. Unfortunately, Canada thistle cannot be eliminated by hand-pulling. Therefore, in the one location where Canada thistle grows along a road that crosses the headwaters of an intermittent stream, herbicide would be sponge wiped on individual plants.

10. Streams, Fish and Riparian Reserves

Thinning From Below in Riparian Reserves. See Appendix H for details on treatment proposed in Riparian Reserves. All Riparian Reserve widths would meet or exceed the requirements outlined in the RMP (pp. 25-27).

There would be a minimum "no treat" area of a minimum of 50 feet on each side of intermittent streams. No trees over 16 inches DBH would be cut or removed. All snags and horizontally leaning trees including OSHA safety trees would be left on site. If snags or horizontally leaning trees are felled for safety reasons, they would remain on the site. In treated areas lacking downed coarse woody material (CWM), drop and leave some trees to improve size and decay class distributions of CWM in both the stream channel for sediment control and aquatic habitat diversity, and the outer portion of the Reserve for wildlife and plant habitat. Every 500 to 1000 feet, one tree (when present) would be fallen toward the stream and left on the ground.

Pre-commercial Thinning (PCT) in Riparian Reserves Riparian Reserves. PCT would only take place in

Reserves adjacent to PCT units. Prior to implementation of any PCT units, resource specialist (hydrologist, fisheries, and wildlife biologists) would make a review to assure compliance with the objectives of the Aquatic Conservation Strategy. PCT would not take place within the functioning riparian area (at least 25 feet from the wetted edge on each side of the stream). Riparian hardwood species such as willow, ash, maple, alder, black would not be thinned. Other important hardwoods would also be prioritized. Thinned material would be "lopped and scattered" when possible in an effort to reduce the need for pile burning. A fish biologist, hydrologist, or wildlife biologist will review all proposed stands before any action take place on the ground.

Broadcast and Underburning in Riparian Reserves. Restrictions and conditions of the Reserves and the streams would be the same as above for commercial and silviculture PCT sites. In addition, all of the areas planned for fuels treatment would be visited by resource specialists to determine if fuels treatment is appropriate for an adjacent Riparian Reserve, to determine the width of a "no treatment" buffer, or to design a slightly different fuels prescription. For example, broadcast burn units may be lit by hand, as opposed to helicopter, in order to better control fire near Riparian Reserves. Broadcast burns would be visited and monitored by resource specialists.

With underburns, no ignition would occur within Riparian Reserves, but backing fire may be allowed to burn down into a Reserve, especially into the non-riparian portions with fire dependant vegetation such as ceanothus and white oak. This would depend on site-specific analysis. Fire lines would be avoided in Riparian Reserves in order to prevent the creation of "mini roads" that could route sediment into the creek. Foam would not be used in Riparian Reserves.

Handpiling in Riparian Reserves. Some handpiling may occur in PCT units, including Riparian Reserves. If handpile burning takes place in Riparian Reserves, the following restrictions apply. Handpile burning would not take place within the functioning riparian area, at least 25 feet from the wetted edge and probably greater (e.g., 50 feet). C. Johnson, BLM Fuel Specialist, estimates that only 7% of the ground is impacted by burn piles in conifer PCT units.

Areas designated as "no handpile burning areas" would be wider on V-shaped streams with steep side slopes in order to reduce sedimentation risks. If necessary, brush and small trees may be "lopped and scattered" to reduce fuels hazard.

Non Federal Improvements
Authorizations of non federal improvements on Public Land would be protected.

F. ALTERNATIVES CONSIDERED BUT ELIMINATED FROM ANALYSIS

In addition to the alternatives analyzed in this EA, the ID team considered other alternatives that could move the ecosystem in this area towards a healthy, sustainable condition. Below is a description of each alternative considered and why it was dismissed from detailed analysis.

1. Construct enough roads in the project area to conventionally harvest (no helicopters) trees on commercial forest land in the entire area.

This alternative was eliminated because of social and biological reasons. Socially, there is local resistance to new road construction. Residents are concerned about indirect impacts from roads. Those

impacts include increased noise from off-highway vehicles, potential wildfire ignition from off-highway vehicles, use of firearms behind and adjacent to residences, and the visual impacts of roads. Biologically, constructing enough roads to conventionally harvest the project area would increase impacts to waterways, aquatic wildlife, terrestrial wildlife, and soils.

2. Acquire private access for potential helicopter sites to avoid any new proposed road.
This alternative was eliminated because private landowners would not agree to permanent access for BLM. To bring the private access up to BLM standards (as required by ACS) and standard conservation measures required by the Threatened & Endangered Species Act, BLM would need to make major capital improvements on the private lands. BLM regulations do not authorize major capital improvements on private land for temporary easements.

CHAPTER III
AFFECTED ENVIRONMENT

A. INTRODUCTION

This chapter describes the present conditions within the proposed Ferris Bugman Project area that would be affected by the alternatives. No attempt has been made to describe every detail of every resource within the proposed project area. Only enough detail has been given to determine if any of the alternatives would cause significant impacts to the environment.

B. GENERAL DESCRIPTION OF THE PROPOSED PROJECT AREA

The proposed project area is in the Middle Applegate 5th field watershed. This watershed includes lands providing runoff draining into the Applegate River from below the confluence with the Little Applegate River to above the confluence with Williams Creek.

A more detailed description of the land areas and resources in the Medford District is presented in Chapter 3 of the Final Medford District Proposed Resource Management Plan/Environmental Impact Statement (RMP/EIS, pp. 3-1 through 3-122). Descriptions can also be found in the three AMA assessments (Health, Aquatic, Social), and the Middle Applegate Watershed Analysis 5th field Watershed Analysis.

C. SOIL/ROADS

The proposed project area lies within parts of two subwatersheds: the Humbug/Chapman and the Ferris/Slagle subwatershed, which drains into the Applegate River.

The proposed Ferris Bugman project area contains three complete drainage areas, most of a fourth, and smaller parts of three others. The seven drainage areas are described below:

1) AM 0503 Applegate River: includes all lands providing runoff draining into the Applegate River from below its confluence with Thompson Creek to above its confluence with Ferris Gulch. About half of this drainage area is included in the proposed project area. This portion of the drainage area contains 19.9 miles of stream, 8.4 miles of which are perennial/intermittent, and 11.5 miles are ephemeral/dry draw.

2) AM 0506 Ferris Gulch: includes all lands providing runoff draining into Ferris Gulch. All of this drainage area is included in the proposed project area. This drainage area contains 29.0 miles of stream, of which 6.2 miles are perennial/intermittent and 22.8 miles are ephemeral/dry draw.

3) AM 0509 Applegate River: includes all lands providing runoff draining into the Applegate River from below its confluence with Ferris Gulch to above its confluence with Slagle Creek. Most of this drainage area is included in the project area. This portion of the drainage area contains 42.7 miles of stream, of which 19.2 miles are perennial/intermittent and 23.5 miles are ephemeral/dry draw.

4) AM 0512 Slagle Creek: includes all lands providing runoff draining into Slagle Creek. All of this drainage area is included in the Ferris Bugman project area. This drainage area contains 63.8 miles of stream, of which 14.4 miles are perennial/intermittent and 49.4 miles are ephemeral/dry draw.

5) AM 0327 Applegate River: includes all lands providing runoff draining into the Applegate River from below its confluence with Keeler Creek to above USGS gaging station Applegate 2SE 14366000. All of this drainage area is within the Ferris Bugman project area. This drainage area contains 7.3 miles of stream, of which 2.7 miles are perennial/intermittent and 4.6 miles are ephemeral/dry draw.

6) AM 0333 Humbug Creek: includes all lands providing runoff draining into Humbug Creek. All of this drainage area is within the Ferris Bugman project area. This drainage area contains 110.5 miles of stream, of which 22.4 miles are perennial/intermittent, and 88.1 miles are ephemeral/dry draw.

7) AM 0336 Applegate River: includes all lands providing runoff draining into the Applegate River from below its confluence with Humbug Creek to above its confluence with Thompson Creek. Only the portion of the drainage area north of the Applegate River is included in the Ferris Bugman project area. This portion of the drainage area contains 9.0 miles of stream, of which 2.4 miles are perennial/intermittent, and 6.6 miles are ephemeral/dry draw.

Drainage Area Data

Drainage Area (DA)	Total Area (Acres)	% of DA within the project area	% of DA potentially affected by proposed action	% of project area within Transient Snow Zone	Road Density miles/ sq. mile	# of road stream crossings within the project area
AM 0503	1990	100	16	0	3.5	32
AM 0506	1751	100	70	0	5.0	76
AM 0509	4427	74	23	0	4.4	78
AM 0512	3862	100	49	3	2.2	100
AM 0327	939	69	30	0	3.7	21
AM 0333	7160	100	68	7	2.3	148
AM 0336	894	74	37	0	2.4	4

Water Quality
The Applegate River has been identified by Oregon Department of Environmental Quality as water quality limited under Section 303(d) of the Clean Water Act. From its mouth to Applegate Reservoir, the Applegate River is water quality limited due to flow modification and summer temperature.

Streamflow Regime
Streamflow in the Middle Applegate Watershed fluctuates with the seasonal variation of precipitation. The project area is characterized by mild winters and hot, dry summers. Average annual precipitation ranges from approximately 25 inches at the lower elevations to 32 inches at the higher elevations. Precipitation usually occurs in the form of rainfall over most of the project area. Between the elevations of approximately 3,500 feet and 5,000 feet, a mixture of rain and snow occurs. Precipitation predominately falls between the months of November and March. Summer months are typically very dry. Moderate to high flows generally occur from mid-November through April with runoff peaking in February and March. The lowest streamflows generally occur in August and September. (MAWA 1995)

High flows are often the result of rain-on-snow storm events that occur when a substantial amount of rain falls on snow accumulated in the transient snow zone (3,500 to 5,000 feet in elevation). The snow level in this zone fluctuates throughout the winter in response to alternating warm and cold fronts. The combination of heavy rain and rapid snowmelt can result in flooding. This effect is minimal in the Middle Applegate Watershed due to the low percentage of land in the transient snowzone (Lindell 1995). The transient snow zone occupies 8% of the Middle Applegate Watershed (MAWA 1995) and 3 percent of the Ferris Bugman Project Area (GIS Data).

The Applegate Reservoir, completed in 1980, has moderated both high and low flows in the main stem of the Applegate River, which now has fewer and smaller peak flows and fewer extreme low flow conditions (MAWA 1995).

Roads collect surface water runoff and intercept subsurface water. This water is quickly transported from the roads to streams (Wemple 1994). A road-altered stream network may cause peak flows to increase in magnitude and change the timing of runoff entering the streams. This is more pronounced in areas with high road densities and where roads are in close proximity to streams. GIS data shows 103 miles of road within the project area with 446 stream crossings. The road density for the entire project area is 3.4 miles of road per square mile.

Soil compaction caused by roads, timber harvest activities, and grazing affects the hydrological efficiency within a watershed by reducing infiltration rates and causing more precipitation to quickly enter streams as runoff instead of slowly percolating through the soil to the streams. Soil compaction data has not been collected for the Middle Applegate Watershed. However, soil compaction will be analyzed at the project level in Chapter IV..

Hydrologic Recovery

Analysis Area	Percent of Area Hydrologically Recovered
	All Lands
5th Field Watershed	82
Ferris Bugman	77

Stream Channel Morphology

The Middle Applegate area is characterized by highly dissected slopes and narrow steep canyons. Granitic rock types as well as other soil types in the project area are highly erodible, especially in steep terrain. Overall, soils within the watershed are stable and erosion rates are relatively low, with problem areas amounting to a very small percentage (Glover and Maurer 1995).

Rosgen's (1994) stream classification system is used to categorize channel morphology characteristics. Stream type categories are based on stream gradients, sinuosities, valley form, entrenchment, and confinement (Rosgen 1994). Most of the streams in the project area are Rosgen A and B type streams. Most streams on federal lands are located in the upper reaches of watersheds and are classified as type A streams. Type A streams are high gradient, entrenched, step/pool streams and highly stable. Type B streams are moderately entreched and riffle dominated with infrequently spaced pools. They have stable stream banks and landforms that are narrow, gently sloping valleys.

Road Data

Analysis Area	Total Road Miles	Road Density Miles/Sq. Mile	Stream Crossings #
5th Field Watershed	519	4.0	5028
Ferris Bugman	103	3.4	446

* GIS Data - Includes public and private lands.

The lower reaches of both Ferris Gulch and Slagle Creek and the main stem of Humbug Creek between the Left Fork and Kane Creek are classified as type G (MAWA 1995). Type G streams are entrenched gullies with

step/pool morphology. They have moderate slopes and low width-to-depth ratios. They are unstable, with grade control problems and high bank erosion rates. All of these reaches are located on private land.

Soils The soils in the project area formed from material weathered from igneous, metamorphic, and granitic rock on hillslopes and alluvial fans. The topography ranges from 5% to near 80% slopes. The major soils series identified in the project area are Caris-Offenbacher, Vannoy, Vannoy-Voorhies, McMullin-Rock, Tallowbox, Ruch, Manita, and Schefflein. The Manita soils have montmorillonitic minerology which causes these soils to have high shrink-swell potential and are subject to severe compaction. The Caris-Offenbacher, McMullin-Rock, and Tallowbox soils have high rock content and/or are shallow in depth which limits moisture holding capacity. The following table list the soil characteristics of each respective soil series. A map showing the location of these soils on the landscape is on file at the Medford BLM office.

MapUnit #	Soil Series Name	Soil Depth	Surface Texture	Subsoil Texture(s)
25/26	Caris-Offenbacher	20-40"	gravelly loam	very gravelly loam
195/196	Vannoy	20-40"	silt loam	clay loam
197	Vannoy-Voorhies	20-40"	gravelly silt loam	gravelly clay loam
113	McMullin-Rock	<20"	gravelly loam	gravelly clay loam
188/189	Tallowbox	20-40"	gravelly sandy loam	sandy loam
158	Ruch	60" +	gravelly silt loam	loam
108	Manita	40-60"	loam	clay loam
164/166	Schefflein	40-60"	loam	clay loam

D. DENSE STANDS/FOREST VIGOR

The present day landscape pattern of the vegetation in the Ferris Bugman project area is a result of topography, fires of the 1800 and 1900s, timber harvesting, and agricultural/residential land development. There is a natural diversity of vegetation condition classes within stands and between stands whose boundaries are generally dictated by slope, aspect and past disturbance. Aspect is an important determinant in vegetation changes. Ridges with westerly to southerly aspects have severe growing conditions with shrubs and grasses dominating these sites. As a result, the majority of the timber stands are separated by grasslands, shrublands or oak woodlands. These influences create a coarse-grained pattern across the landscape with a mosaic pattern of different vegetation types and seral stages.

In the Appleseed project area, 24,425 acres are federally-owned, 10,085 acres of which are in the Ferris Bugman project area. The Ferris Bugman project area is presently composed of the following vegetation types: grassland, 249 acres; shrubland, 1,292 acres; hardwood/woodland, 3,638 acres; seedlings/saplings (0 to 4.9 inches DBH), 218 acres; small conifer timber (5 to 11 inches DBH), 822 acres; and large conifer (11 to 21 inches DBH) and mature timber, 3,484 acres. There are an additional 382 acres in owl cores wherein no vegetation management will take place.

In the project area, many of the commercial forest stands originated between 1864 and 1934 following small and large-scale fires. Most of the forest stands became established within 10 years after a fire, although the harsher sites may have taken 30 to 40 years to become forested. Because these fires were forest-replacing in nature, individual timber stands now tend to be finely grained. This means that there are many trees of the same age class almost equal in height, with few older trees scattered throughout. The majority of the trees in the project area are between 65 and 140 years old. However, there are 130 to 200 year old trees in fewer numbers. The oldest trees found were 302 and 345 years old. Age classes greater than 170 are the least frequently found. These older stands are in the understory reinitiation stage of forest development and vertical stand structure is diverse .

Most stands 100 years old and less are still in the stem exclusion stage. These stands are characterized by a closed canopy and high stocking levels (sometimes more hardwoods than conifers) with many suppressed trees resulting in poor individual tree vigor. The average canopy closure for the Appleseed project area is 87% and ranges from 50 to 99%. Some forest stands have been selectively logged, commercially thinned or have suffered mortality from natural disturbance. These stands tend to be more diverse in species composition and vertical structure.

There are three tree series in the project area: Douglas-fir, ponderosa pine, and white oak. The PSME (Douglas-fir)/RHDI (poison oak) and PSME/RHDI-BEPI (Piper's Oregongrape) plant associations are most prevalent at lower elevations and on dry ridges. As the elevation increases and rainfall is more abundant, or the aspect is more conducive to cooler temperatures, plant associations most often found include PSME-PIPO (ponderosa pine), and PSME/BENE (dwarf Oregongrape). Small areas of PIPO-QUKE (California black oak) are present. The PIPO-PSME association is slightly warmer and wetter than the PIPO-QUKE association. Poison oak is the only commonly occurring shrub (USDA, 1996). The white oak series (QUGA) occurs near the valley floor at low elevations. The series tends to be found in areas of shallow soils, and hot, dry microclimates. Two oak associations may be found: QUGA-PSME/RHDI and QUGA/CYEC (hedgehog dogtail).

Subtle changes in species composition and stand structure are occurring over the landscape. Many trees with old-growth characteristics are dying as a result of increased competition with second growth trees for limited resources. Douglas-fir, the climax species for the majority of the forested area, is replacing ponderosa pine, sugar pine and incense cedar because of its more shade-tolerant nature. Douglas-fir is encroaching upon the edges of the oak woodlands, and mortality of Douglas-fir along these edges has been noticeable during the last few years. Whiteleaf manzanita and ceanothus species are migrating into the oak woodlands and replacing the oaks, pines, and native grass species. In the mid-size vegetation condition class, suppressed shrubs and hardwood trees beneath the dominant tree canopy layer are dying. Pacific madrone and white and black oak have dropped out of conifer stands where light and water have become limiting. Dead whiteleaf manzanita may be found in the understory of some conifer stands and is indicative of a vegetation shift from shrubs to trees. This may also indicate that whiteleaf manzanita is the species that will pioneer the site following future disturbance. Other shrub species dying out of the conifer stands include deerbrush ceanothus, creambrush oceanspray, and serviceberry.

Currently, the stocking levels of stands throughout the project area are high. This is primarily due to the lack of natural disturbance and fire suppression. Merchantable trees per acre range from 77 to 578. The overall average for the Appleseed project area is 378 merchantable trees per acre. Average radial growth for the past ten years is 0.55 inches. The average relative density for the area is 0.75 and indicates that physiologically, the trees are at the point of suppression and mortality. Vegetation densities are also extremely high in the shrublands and woodlands and indicate an increased potential for fire. The average tree vigor index, as measured by leaf area index is 47. Trees with vigor indices below 30 will succumb to attack from bark beetles of relatively low intensity. Trees with vigor between 30 to 70 can withstand progressively higher attacks but are still in danger of mortality from the insect attacks. Trees with vigor between 70 to 100 can generally survive one or more years of relatively heavy attacks; trees with indices above 100 generally cannot be killed by bark beetles (Waring, 1980).

Bark beetle infestations are present in the project area. Western pine beetles *(Dendroctonus brevicomis*) are attacking the pines, while flatheaded fir borers *(Melanophila drummondi*) and Douglas-fir beetles *(Dendroctonus pseudotsugae*) are killing Douglas-fir. Drought conditions and high tree stocking levels are severely stressing the trees physiologically, enabling the beetles to enter and kill the trees.

Forest pathogens are also changing the forest stand structure and forest development pattern. *Phellinus pini* (red ring rot) is affecting Douglas-fir and ponderosa pine. The disease is most common in stressed trees. Some of the infected trees are beginning to die or are subject to stem breakage thus allowing light to reach the forest floor and the understory reinitiation stage to begin. *Phaelous schweinitzii* (brown cubical butt rot) is also present.

In the project area, the overall average amount of coarse woody material (CWM) is approximately 7.3 tons per acre. The coarse woody material stem diameters were concentrated in the 5 to 29 inch classes at the large end, and averaged 25.4 feet in length. Coarse woody material was most often found to be in a decomposition class 3 which is characterized by very little bark, no twigs, but a solid stem.

Noxious Weeds

Known Noxious Weed Sites

Location	Unit	Weed Species
37-3W-31	Bugman #1	*Cirsium vulgare* (Bull thistle)
38-4W-1	Bugman #2	*Cirsium vulgare*
38-3W-6	Bugman #5	*Centaurea solstitialis* (Star thistle) *Cirsium vulgare*
38-4W-12	Bugman #8	*Cirsium vulgare*
38-4W-11	Bugman #9	*Cirsium vulgare*
38-3W-7	Bugman #10	*Cirsium vulgare*
38-4W-20	Ferris #5	*Centaurea solstitialis*
38-4W-20	Ferris #17	*Taeniatherum caput-medusae* (Medusa head)
37-4W-29	Slagle #1	*Cirsium vulgare*
37-4W-33	Slagle #3	*Cirsium vulgare*
37-4W-34	Slagle #8	*Cirsium vulgare*
37-4W-35	Slagle #6	*Cirsium arvense* (Canada thistle)
38-4W-2	Slagle #8	*Cirsium vulgare*
38-4W-3	Slagle #8	*Cirsium vulgare*
37-4W-33	Slagle #9	*Cirsium vulgare*
37-4W-33	Slagle #10	*Cirsium vulgare*

37-4W-33	Slagle #11	*Cirsium vulgare*
37-4W-33	Slagle #12	*Cirsium vulgare*
37-4W-33	Slagle #13	*Cirsium vulgare*
37-4W-32	Slagle #14	*Cirsium vulgare*
37-4W-32	Slagle #15	*Cirsium vulgare*
38-4W-4	Slagle #19	*Cirsium vulgare*

E. FIRE AND FUELS

Fire plays an important role in the development and maintenance of vegetative diversity in fire prone ecosystems as found throughout the project area. Prescribed fire is a tool which would be used to meet objectives for vegetative communities such as grasslands, shrublands and oak woodlands.

Climate and topography combine to create the fire regime found throughout the project area. Fire regime refers the frequency, severity and extent of fires occurring in an area (Agee 1991). Vegetation types are helpful in delineating different fire regimes. Two broad fire regimes within the project area were identified using vegetation types as a basis for fire regime delineation. These regimes are based on the effects from fire on the dominant vegetation.

Low-Severity Regime

This regime is characterized by vegetation types such as grasslands, shrublands, hardwoods and mixed hardwood, and pine which are similar to the Interior Valley Vegetative Zone of Franklin and Dyrness (1988). These plant communities recover rapidly from fire and are directly or indirectly dependent on fire for their continued persistence. The dominant trees within this regime are adapted to resist fire due to the thick bark they develop at a young age. A low- severity regime is characterized by nearly continual summer drought, fires are frequent (1-25 years), burn with low intensity, and are widespread.

Moderate-Severity Regime

This regime is associated with the Mixed Conifer Vegetative Zone of Franklin and Dyrness (1988) and is characterized by long summer dry periods; fires are frequent (25-100 years). It is the most difficult to characterize and is often located in a transitional position between low and high elevation forests or plant communities. Fires burn with different degrees of intensity within this regime. Stand replacement fires as well as low intensity fires can occur depending on burning conditions. The overall effect of fire on the landscape in this regime is a mosaic burn.

F. WILDLIFE/T&E ANIMALS

Approximately 235 vertebrate wildlife species are known or suspected to occur in the proposed project area. A more detailed discussion on wildlife is included in **Appendix W**.

Threatened/Endangered Species The northern spotted owl, a species listed as threatened under the Endangered Species Act (ESA) of 1973, as amended, is present in the project area. There is also potential for the presence of bald eagles, listed as threatened under the ESA.

Four 100 acre spotted owl core areas (that are managed as Late Successional Reserves under the Northwest Forest Plan) are located within the boundary of the Ferris Bugman project.

There are approximately 1,903 acres of suitable spotted owl habitat and 1,992 acres of dispersal habitat on federally managed lands within the project area boundary. Suitable habitat includes nesting, roosting or foraging

and generally has a high degree of canopy closure (approx. 60 %+), multilayered canopy, presence of large snags and coarse woody debris. Dispersal habitat provides spotted owls with some degree of protection from predators during juvenile dispersal and other movements, and generally has conifer with an average diameter of 11 inches or larger with 40 to 60 percent canopy closure.

Special Status Species
Special Status Species are those species that are federally listed as threatened or endangered, proposed or candidates for federal listing as threatened or endangered, or are BLM designated sensitive, assessment or tracking species. Special status species known or suspected to be present within the proposed project area and their status are listed in **Appendix W**.

Survey and Manage/ Protection Buffer Species The proposed project area was surveyed for the following Survey and Managed species: Siskiyou Mountains salamander (*Plethodon stormi*), great gray owls *(Strix nebulosa)*, red tree voles (*Arborimus longicaudus*), and three species of terrestrial mollusks (*Helminthoglypta hertleini, Monadenia chaceana, and Pristiloma arcticum crateris*).

The results of the surveys follow:
- Siskiyou Mountains salamander - Suitable habitat present; to date, two known sites located
- Great gray owl - One nest site was located
- Red tree vole - No red tree vole nests found
- Mollusks - No S&M mollusk species were found.

Protocol surveys have not been completed for Siskiyou Mountains salamanders *Plethodon stormi* (PLST) in two small areas (approx. 5 acres each) around Wellington Butte. One spring survey has been completed on each of the talus areas. Two additional surveys are required to meet survey protocol. Completion of the required surveys is planned for Fall of 2001 if weather conditions meet protocol standards.

G. RIPARIAN/FISHERIES
Fish and Fish Habitat On June 18, 1997, the National Marine Fisheries Service (NMFS) listed southern Oregon/Northern California (SONC) coho salmon as "Threatened" under the Endangered species act [FR 62(17:33038]. On May 5, 1999, NMFS designated "Critical Habitat" for SONC coho [FR64(86):24049]. All of the streams in the project area lie within the designated Critical Habitat area for SONC coho. However, within the project area, coho only spawn and rear in the Applegate River. The closest harvest unit in the Ferris Bugman project is approximately 1½ miles from the river; the farthest is approximately 6 miles.

None of the harvest units are near any of the fish-bearing stream reaches. In fact, 70 % of the Riparian Reserves on federal land protect intermittent streams, many of which are short duration due to the south aspect, soils, and vegetation types found in the area. See Appendix F for more information

Table 1 Stream miles on *public land* within the Ferris Bugman Project analysis area.

Drainage	Fish-bearing	Non-fish bearing		
	All stream types	Perennial	Intermittent	Total
Humbug Creek (AM 0333)	0	4.5	7.0	11.5
Ferris Gulch (AM 0506)	0	3.0	3.0	6
Slagle Creek (AM 0512)	0.4	1.5	3.0	4.9

	Fish-bearing		Non-fish bearing	
Drainage				
Applegate frontal (AM0509)	0	0	2.0	2.0
Applegate frontal (AM0503)	0	0	2.5	2.5
Applegate frontal (AM0327)	0	0	1.5	1.5
Applegate frontal (AM0336)	0	0	1.0	1.0
Total	**0.4**	**9**	**20**	**29.4**

Riparian Reserve Condition on Public Land

Humbug Creek South-facing Humbug Creek drainage burned in the major fire of 1931. Many intermittent streams have riparian vegetation characterized by extremely thick, dense, second growth Douglas-fir of less than 6 inches DBH, or manzanita and buck brush. There is very little undergrowth or a second canopy layer due to the overgrown condition of the primary vegetation. There is also very little CWD, which may be a result of past forest fires, past gold-mining, or a combination of the two. Functional Riparian Reserves tend to be very narrow: 20 feet on each side of the stream is common[1].

Ferris Gulch Ferris Gulch has a large amount of its mainstem on public land. Unfortunately, the riparian area along mainstem Ferris Gulch– oak woodlands on the south and mixed conifer woodlands on the north– has been invaded by weeds. Roads and OHV trails run along the stream. Riparian areas along the intermittent streams that feed Ferris Gulch are of two types. The east-facing streams have timbered reserves. The west-facing streams flow through overgrown oak woodlands and scraggly conifer stands. These small streams have very little to no riparian vegetation and narrow (less than 25 feet on each side) functional riparian areas.

Slagle Creek In Slagle Creek, most of the project area is in the forested areas. The intermittent streams in these forested areas tend to be V-shaped, with narrow functional riparian areas. Only perennial streams seem to have good vegetation understories; however stream channels appear to be less impacted from historical activities. Although suppressing secondary vegetation layering, the closed conifer canopy in some of the Slagle Creek tributaries keeps the riparian areas moist.

H. BOTANY

Bureau Special Status Species Qualified botany contractors surveyed all of the proposed areas of activity for Bureau Special Status and Survey and Manage vascular plants, as well as the federally listed *Fritillaria gentneri*, during the 1998 field seasons. Surveys documented 66 occurrences for 12 species (Appendix B). The one occurrence of the Federally listed *Fritillaria gentneri* in Bugman Unit# 15, T38S, R4W, SEC 13 and the one occurrence on the edge of the proposed burn unit in T38S, R3W, SEC 7, would receive a a 150 feet radius buffer. The 50 occurrences of the Bureau Special Status Plants *Arabis modesta, Clarkia heterandera, Cypripedium fasciculatum, Festuca elmeri, Meconella oregana, Mimulus bolanderi and Sedum oblanceolatum* would receive a variable radius buffer of 100-150 feet. This buffering provides protection from physical disturbance and microclimate alterations associated with timber harvest activities

Northwest Forest Plan Species All of the proposed activity areas were surveyed for the presence of Survey and Manage fungi, lichens, and bryophytes in the spring and fall of 1998 and in the spring of 2001, in accordance with established protocols. Surveys documented 17 occurrences for two species (Appendix C). The 17 occurrences of

[1] Based on BLM stream survey data covering most perennial and intermittent streams in the project area.

the Northwest Forest Plan species *Bryoria tortuosa* and *Dendriscocaulon intricatulum* would receive a 100 feet radius buffer in accordance with Medford BLM District Office Instruction Memorandum OR110-2000-8 dated 23, June, 2000. This buffering provides protection from physical disturbance and microclimate alterations associated with timber harvest activities

I. CULTURAL RESOURCES

A field survey (Stepp Consulting, 1997) was conducted and sites of cultural value such as historical or prehistorical ruins, graves or grave markers, fossils, or artifacts. The survey was reviewed by the District Archeologist and the State Historic Preservation Officer was notified of the result.

J. RECREATION

The Medford District RMP designated 2,200 acres in Ferris Gulch as an Off Highway Vehicle (OHV) area where OHVs are limited to existing roads and designated trails.

K. RANGE

The Billy Mountain Allotment #20203 is located within the project area. The range report is in the EA file, and available upon request.

L. PRIVATE USES ON PUBLIC LANDS

The following private authorizations on public land are in the project area.

Company or Individual	Location	Type of Authorization	Index No.
PP&L	38-4W-20	Powerline	OR51476
Worthylake, R.&P.	38-4W-17,20,29,30	Road R/W	OR54585FD
Henderson, G.	37-4W-31	Waterline R/W	OR41548
Prowse, R.&P.	37-4W-31	Road R/W	OR47260
Larson, T.&S.	37-4W-32	Road R/W	OR51452FD
Chapman, Ken	38-4W-10	FLPMA Lease	OR54454
Tipton, Paul	38-4W-11&12	Waterline R/W	OR33885
Burlingham, V.	38-4W-13	Road R/W	OR36238
Ore. State Police	37-3W-31	Comm. Site	OR40876
PP&L	38-4W-17	Powerline	ORE01122
Hanscom, Charles	SW¼S.5,T38SR4W SE¼S.6,T38SR4W	Mining Claim	ORMC19981
Provolt, Jack & Monte	NE¼S.7,T38SR4W	Mining Claim	ORMC153620,21
Norbert, Zwan	SE¼S.30,T38SR4W	Mining Claim	ORMC150969
Linda Rose Assoc., Inc.	SW¼S.6,T38SR3W SE¼S.6,T38SR3W	Mining Claim	ORMC14005,6 ORMC147951-4

CHAPTER IV
ENVIRONMENTAL CONSEQUENCES

A. INTRODUCTION

This chapter forms the scientific and analytic basis for comparison of alternatives. Discussions include the environmental impacts of the alternatives and any adverse environmental effects which cannot be avoided. It also identifies and analyzes mitigation measures which may be taken to avoid or reduce projected impacts. The impact analysis in the Medford District Proposed Resource Management Plan/Environmental Impact Statement (RMP/EIS)(Oct. 1994) analyzed the significant impacts associated with road building and commercial harvesting of conifers (pages 4-3 to 4-21) to which this EA is tierd.

The impact analysis addresses direct, indirect, and cumulative impacts on all affected resources of the human environment, including critical elements.

B. MITIGATION MEASURE

1. Eliminate harvesting overstory trees with a diameter class of over 20 inches DBH. This measure was requested by concerned publics from the Appleseed Project Analysis during 1999.

Silviculture: This mitigation measure would only work when large diameter trees are naturally spaced far apart from each other. Most of the time, this does not happen in the project area. This may be appropriate for the planned wildlife connectivity corridors. It may also be appropriate where only second growth Douglas-fir are to be commercially thinned. This measure would maintain large diameter trees but would not always reduce stand density levels enough or accomplish the current objects for the desired species composition of the forest. Silviculturally there is no reason to protect trees 20 inches DBH and larger unless there is a specific project objective to do such.

Although we are treating landscapes and looking at projects from a broader perspective, it is important to note that when applying a marking prescription, we are looking at each individual tree based on its surrounding environment. For example, a 28 inches DBH tree could very well be next to a 36 inches DBH tree and the decision could be to thin out the 28 inches DBH tree in order to release the larger one. Southern Oregon stands are not uniform in nature.

It is important that we use the best knowledge available to keep large trees in the ecosystem, and begin to promote more large trees and other species. Using a general prescription with an imposed diameter limit of 20 inches DBH would limit our ability to meet these objectives or those set forth in the purpose and need statement in this EA.

Using a diameter limit prescription would put old growth trees and shade intolerant species such as pines and incense cedar in jeopardy. Releasing true old growth trees, pines and cedars would enhance their vigor. See "Thinning to Increase Vigor of Old-Growth Trees" by John Tappeiner and Penelope Latham (available in the EA file). Harvesting some 20 inches DBH and larger second growth Douglas-fir trees would create diverse stand diameter structure. We have already experienced the mortality of a large percentage of our true old growth trees (both pines and Douglas-fir) because of high vegetation densities. If we do not harvest some 20 inch and larger second growth trees we would continue to lose trees over 200 years of age and our shade intolerant species. This contradicts the objectives of our silvicultural prescriptions. In uneven-aged management, trees are usually harvested in all diameter classes.

Most marking prescriptions have the objective of growing big trees or maintaining the large trees we currently have. Trees with old growth characteristics usually have large crowns with large limbs, indicating the tree once grew in an open condition. In order to develop our dominant trees into large (over 40 inches) diameter trees that contain old growth characteristics, we need to thin around them. This includes creating open space around the live crown. This allows sun to fully penetrate the crown allowing it to photosynthesize, grow and put on diameter growth.

Some stands contain only a few remnants of these large old growth trees. In many stands, ponderosa pine, black oak and madrone, once important components. The amount of those species has now been reduced to only a few due to encroaching, more shade tolerant Douglas-firs. It is important that we begin to promote more shade intolerant species if we feel species diversity is the right goal.

Logging Systems: The Forest Creek landscape project has similar vegetative conditions and proposed harvest prescriptions to Ferris Bugman. Utilizing data from Forest Creek, it is observed that out of 72,750 merchantable trees slated for removal, six percent (6%) were over 20 inches in diameter. It is useful to note, however, that this Six percent (6%) equates to approximately 30% of the project sold timber volume.

As a general rule, logging system costs (falling, yarding, loading) are lower as the average diameter of trees removed are higher. The proposed action, including the logging of small, suppressed understory trees, in conjunction with using aerial logging methods in order to limit road construction, would create expensive logging costs. Imposing a 20 inches diameter limit may bring the appraised stumpage value to a minimal economic value or perhaps even below cost (10 % of pond value). This may limit the ability to sell the merchantable trees, thus impairing the ability to meet the purpose and need of the project. Other projects designed in the timber sale, such as projects designed to reduce sediment in streams, replacing old culverts, or decommissioning roads, would need to be funded under other methods.

Helicopter yarding is more expensive than road building and using cable systems to log the same area. The ability to sell the merchantable volume could be made more economically viable by reducing the amount of helicopter yarding. This would, of course, require more road building.

Wildlife: All of the ecological health assessments and watershed analyses performed in the Applegate have indicated that there is a shortage of large trees. Large trees are important components of late successional wildlife habitat. Large trees turn into large snags, tend to have large horizontal limbs, and are more resistant to wildfire than smaller trees. Some species of wildlife need large trees for specific functions such as denning sites and nest trees. This measure would benefit these species for as long as these trees and snags persist and provide habitat. If the 20 inches diameter limit precludes the economic viability of the project as a whole, the longterm impacts would be negative to species which need large trees and snags because the increased tree growth resulting from thinning would not occur. Large trees for the future would not be produced in as great a number or as rapidly as if the thinning were to occur.

2. Reduce the length of the proposed new, ridge road south of Slagle Creek. This would end the proposed road along the ridge just east of the section line between sections 3 and 4, T38S,R4W. This measure is considered part of the No Action Alternative but was requested by concerned publics.

Wildlife: Based on an estimated six (6) acres of permanent clearcut per mile of new road construction, this mitigation measure would reduce the amount of suitable spotted owl habitat permanently lost to road construction by approximately six (6) BLM acres. Impacts to deer winter range on the south and west slopes of the ridge would not be mitigated as the road would still be built there.

Fuels: Impacts to Commercial Timber Stands: Without access the type of burning that could be used to treat commercial timber land would be limited. Handpile burning could be used to mitigate any fuel hazard created by timber harvest operations. With limited access the cost of handpile burning increases by an average of 33% (from $301/acre to $450/acre). If mop-up is needed the cost could double because of limitations of water and crew access. Also, based on the above, the burning window (number of days per year which are available for burning) is decreased.

Future maintenance (underburning) of these stands could not be accomplished. The risk of escape is a major factor when conducting prescribed fire operations. Limited to no access increases the risk of escape due to the lack of availability and mobility of people, equipment, and water. These factors plus the proximity of private land makes the risk too high to underburn these areas.

Impacts to Non Commercial Base Land: Manual treatment (cutting of brush) and handpile burning could be accomplished to reduce the present fuel hazard. Limited access would increase the cost of operation by approximately 25% ($1,350/acre to $1,800). In order to maintain these areas in a low fuel hazard, underburning needs to occur on a routine basis. It is estimated that low intensity burns would be needed on a 5-10 year interval. This type of maintenance burning is also beneficial to species which dependent on fire such as the Oaks, Pines and native grasses. Limited to no access would preclude this type of treatment for the same reasons mentioned above.

Short term impact would be approximately 185 acres of commercial forest lands and approximately 292 acres of pine/oak woodlands would be access limited.

Long term impact would include approximately 100 acres of commercial forest lands and approximately 240 acres of pine/oak woodlands would be access limited.

Aquatic: Part of the road is almost entirely on the very top of the ridge. If constructed, this last portion would contribute very little sediment to headwater streams. However, the remaining part of the road crosses several first and second order streams and traverses upper, mid-slope areas to get around an area commonly known as Molly's Peak. Sediment risk to headwater streams is greater through these crossings and upper mid-slope areas than it is on the ridge. Therefore, the overall sediment risk to Applegate River and Slagle Creek headwater streams would be almost the same as if the road was constructed to its full length.

If BLM does not construct the road across Boise Cascade Corporation (BCC) land, BCC *may* decide to exercise their Right-of-Way through private land along Slagle Creek's riparian area. This would be detrimental to the BLM's objectives of watershed restoration in the Slagle Creek drainage and could impact riparian-dependant wildlife species. Boise Cascade Corporation may decide to extend BLM's road and continue building it across their land to facilitate cable yarding. The BCC road would not be constructed to more stringent BLM specifications and could cause more sediment and erosion problems in Section 4.

Road construction through this area include decommissioning, approximately one (1) mile an old mining road that crosses two (2) a small tributaries to the Applegate River. This would be a benefit lost for aquatic species.

Range: Decreases access, increases administration and monitoring cost.

Logging Systems: Approximately 285 acres of commercial forest land is affected by this proposal. In the short

term 185 acres of timber available for cable yarding would have to be helicopter yarded, if harvested. In addition, the average yarding distance would double from approximately ½ mile to slightly over a mile. There would be an estimated increase in yarding cost ranging from a low of $135/MBF to a high of $260/MBF. The increased yarding cost, especially at the high end would probably make this an uneconomical project.

Soils: The proposal to end the road just east of the section line between sections 3 and 4 would eliminate approximately 1.5 miles of road. Most of this road is proposed to be on 9 percent grade as it runs along a ridge line. Eliminating this portion of the road would decrease the amount of disturbance from the total proposed road construction by about five (5) percent. This portion of new road is proposed along the ridge line erosion and subsequent sediment yields are not predicted to be substantial. Therefore, eliminating this portion of the proposed road would keep approximately six (6) acres of land in productivity and slightly reduce anticipated sedimentation yields to local waterways.

Vegetation: This would reduce the potential of noxious weed invasion in proportion to the reduced length of road construction.

3. Eliminate the proposed new road construction along the northern portion of Slagle Creek, which begins in the Foots Creek drainage. This measure is considered part of the No Action Alternative, but was requested by concerned publics.

Wildlife: The new road construction would be an extension of the Foots Creek road system which is behind a locked gate. This gate is one of the most effective in the resource area. The Private landowner in the area makes sure the gate is locked and not tampered with. It is probably safe to assume that the new road construction would remain inaccessible to on-road vehicles. The ridge line where the new construction would start is used extensively by OHV and the additional road construction could encourage additional OHV activity farther south and closer to the "enchanted forest" and it's resident spotted owls. The enchanted forest trail is currently closed to OHV use and the new road construction could encourage the development of a link trail between the new road and the existing closed trail. Not building the road would reduce the potential for vehicular (ORV/ATV disturbance of wildlife in the area, and reduce the potential for abuse of the existing enchanted forest trail and near by owl site.

Aquatic: There is an existing jeep road currently on this ridge. It has some steep grades. Steep grades create erosion and sediment problems to the watershed. The existing erosion and sediment problems would continue.

The road follows the top of a ridge. Traditionally, ridgetop roads are the most stable and make the least contribution to instream sediment. In addition, standards to reduce water routing and sediment input into draws or other water routes have toughened. The National Marine Fisheries Service strongly recommends ridgetop roads over midslope or riparian area roads.

Logging Systems: Approximately 230 acres of commercial forest land is affected by this proposal. If accepted, approximately 70 acres of timber available for cable yarding would have to be helicopter yarded, if harvested. The nearest potential landing would be on land owned by Indian Hill, LLC. In addition, the average yarding distance would double from approximately 1800 feet to approximately 3900 feet. There would be an estimated increase in yarding cost ranging from a low of $125/MBF to a high of $200/MBF.

Soils: Eliminating the proposed road along the northern portion of the ridge along north fork Slagle Creek decreases new construction by approximately 1 mile of road. This road is proposed to be built along the ridge line so minimal sedimentation would occur in local waterways although approximately six (6) acres of land would be disturbed. The road is proposed to be completely surfaced and seasonally closed so erosion would be near background levels after the first few years that it is built. Not building the road would leave the area in near natural condition with erosion rates at minimal levels.

Vegetation: This measure would reduce the potential for noxious weed introduction to open plant communities in close proximity to the proposed road.

4. Reserve all large trees in the two conifer stands located in the upper southeast reaches of Slagle Creek (north aspects in the NE¼NE¼ Section 9 and the SW¼SW¼ of Section 3, T.38S.,R4W.,W.M.). This measure was requested by concerned publics.

Wildlife: All of the ecological health assessments and watershed analyses performed in the Applegate have indicated that there is a shortage of large trees. Large trees are important components of late successional wildlife habitat. Large trees turn into large snags, tend to have large horizontal limbs, and are more resistant to wildfire than smaller trees. Some species of wildlife need large trees for specific functions such as denning sites and nest trees. This measure would benefit these species for as long as these trees and snags persist and provide habitat. If the 20" diameter limit precludes the economic viability of the project as a whole, the long term impacts would be negative to species which need large trees and snags because the increased tree growth resulting from thinning would not occur. Large trees for the future would not be produced in as great a number or as rapidly as if the thinning were to occur.

C. CUMULATIVE EFFECTS ANALYSIS - Eight Principles of CEA

- Cumulative effects are caused by the aggregate of past, present, and reasonably foreseeable future actions.
- Cumulative effects are the total effect, including both direct and indirect effects, on a given resource, ecosystem, and human community of all actions taken, no matter who (federal, non-federal, or private) has taken the actions.
- Cumulative effects need to be analyzed in terms of the specific resource, ecosystem, and human community being affected.
- It is not practical to analyze the cumulative effect of an action on the universe; the list of environmental effects must focus on those that are truly meaningful.
- Cumulative effects on a given resource, ecosystem, and human community are rarely aligned with political or administrative boundaries.
- Cumulative effects may result from the accumulation of similar effects or the synergistic interaction of different effects.
- Cumulative effects may last for many years beyond the life of the action that caused the effects.
- Each affected resource, ecosystem, and human community must be analyzed in terms of the capacity to accommodate additional effects, based on its own time and space parameters.

For this analysis, the affected area is defined at two different spatial scales: Ferris Bugman project area (roughly Ferris Gulch, Slagle Creek, and Humbug Creek watersheds) and the HUC-5 watershed (the entire Middle Applegate watershed). Ferris Bugman project area contains approximately 10,081 BLM acres and 9,426 private acres. The Middle Applegate contains 47,292 BLM acres, 2,077 U.S. Forest Service acres, 203 State of Oregon acres, and 34,013 private acres.

Past actions generally refer to those post-European settlement, for example, commercial timber harvest on public and private land, road construction, and agricultural development in the valley bottom. For a summary of the effects of past actions, see the Middle Applegate Watershed Analysis (pages 9-19). The present action is defined as the Ferris Bugman project. Reasonably foreseeable future *federal* actions

include upcoming scheduled BLM projects. Personal communication with representatives from the Forest Service indicated that there are no major Forest Service projects being planned in the Middle Applegate Watershed at this time. For reasonably foreseeable private actions, BLM assumes that all private forest land would be clearcut.

Baseline data for cumulative effects analysis is listed below. Impact Analyses (Direct, Indirect, and Cumulative) are listed after this baseline data under the specific resource analysis.

Since 1995 an estimated 1,780 acres of private land has been harvested and 8,955 acres of federal timber land has either been thinned or is under contract to be thinned on BLM and U.S. Forest Service managed land within the Middle Applegate Watershed. The following Table depicts this acreage by year sold.

Year Sold	Acres Harvested
1995	719
1996	2052
1997	2607*
1998	1040
1999	2083
2000	454
Total	8,955

* Includes 220 acres of U.S. Forest Service thinning in Upper Thompson Ck.

Since 1995, 4.96 miles of new road has been constructed or is under contract to be constructed within the Middle Applegate Watershed on federal land in the Ashland R. A. In addition, 10.77 miles of roads have been or are under contract to be decommissioned within this watershed. Approximately 2.53 miles of temporary roads have been either been built and/or decommissioned or are under contract to be built and decommissioned. The following table shows this road work.

Road Number or Location	Miles Constructed	Miles Decommissioned	Temporary Road
37-3-26.1	2.65		
37-3-27.0	0.18		
T37SR3W27		0.30	
37-3-33.1			0.33
37-3-33.2			0.17
38-2-19.1	0.28		

Road Number or Location	Miles Constructed	Miles Decommissioned	Temporary Road
38-2-29.2	1.58		
38-3-5.1		0.50	
38-3-5.4		0.20	
38-3-6.1		0.40	
38-3-8.2		0.26	
38-3-9.3			0.46
38-3-15.2		0.40	
38-3-15.3		0.22	
38-3-15.4		0.13	
38-3-16.0		0.20	
38-3-26.0		0.30	
T38SR3W1,6,7		2.00	
38-4-1.1			1.57
38-4-20.0		0.20	
38-4-20.1	0.79		
38-4-28.2		0.60	
38-4-29.0	1.43		
Spur A	0.07		
T38SR4W27		1.60	
T38SR4W33		0.80	
39-3-5.1		0.10	
39-3-5.2		0.20	
T39SR3W9		0.90	
39-2-7.1	0.89		
Jeep Rd. A		0.91	
Jeep Rd. B		0.41	

Road Number or Location	Miles Constructed	Miles Decommissioned	Temporary Road
Jeep Rd. C		0.14	
Totals	4.96	10.77	2.53

Breakdown of treated acres (proposed action)

Description	**Total Area (acres)**
Private land within the Ferris Bugman Project	9,426
BLM land within the Ferris Bugman Project	10,081
Conifer forest on BLM land within Ferris Bugman Project	4,906
Conifer forest being proposed for thinning/stand density	1,856
Non-commercial sites proposed for thinning and prescribed burning with a follow-up maintenance burn within the next 10 years.	1,537

Commercial timber harvesting projects being planned on federal land within the Middle Applegate watershed on the Ashland R.A. in the foreseeable future are China Well, Chapman Keeler (FY 2003) and Upper Thompson (FY 2004). The amount of acreage to be harvested and the type and amounts of road work are unknown at this time because of the lack of completed pre-treatment surveys and site specific analysis.

Non-commercial treatments include the Slashbuster IV project which is planned for FY 2002. This project involves 1,400 acres in Humbug Creek, Long Gulch, and China Gulch watersheds.

D. SOIL AND WATER

Direct and Indirect Effects of Alternative 1 (No Action)

Roads would not be maintained and road drainage would not be improved. Road densities would remain at the current level and more roads would be open to traffic. This will result in no reduction of sediment production and may increase the potential for sediment delivery over time as roads deteriorate.

No density management or fuel reduction would occur. This would increase the potential of wildfire to occur in the project area. The increased fuel levels could result in a much more severe wildfire. Wildfire, even a severe fire, is a natural part of the landscape. However, severe fires have higher potential to devastate watersheds. Such a fire could destroy riparian vegetation, increase sediment delivery and erosion potential, and destabilize stream channels. Impacts from a large, high intensity wildfire would be much greater and effect much more of the watershed than the proposed action.

Direct and Indirect Effects of Alternative 2, Proposed Action With Transportation Management

Soils

Soils in the project area are generally stable and the landslide hazard is considered low. Areas of high

landslide potential have been avoided or included in Riparian Reserves. Harvest units would be scattered across the project area in a patchy network. Soil disturbance would be limited to these localized areas with only a fraction of soils within each harvest unit disturbed. There would be no widespread areas of continuous soil disturbance.

All tree harvesting using tractors would be accomplished using designated skid trails resulting in the compaction of approximately 12 percent or less of the unit (Froehlich 1981). Cable and helicopter yarding would result in less soil disturbance. Cable yarding subjects up to seven (7) percent of the unit to severe disturbance (Smith 1979). Helicopter yarding would subject about one (1) percent of the unit to severe disturbance (Klock 1975). Based on Table 1 in Appendix A, if the most impacting method of yarding was used on every acre of each harvest unit, the estimated amount of soil compaction resulting from timber harvest would be 153 acres or eight (8) percent of the total treatment area (within harvest units). New road construction would compact an additional 13 acres with helicopter landings and temporary spur roads adding about 14 acres. The combined acres would result (in the worst case scenario) in the compaction of about 2% of the Ferris Bugman project area and 0.22% of the Middle Applegate 5th field watershed. This is the maximum amount of compaction that would occur. It is unlikely that there would be any noticeable effect from this small amount of disturbance.

Water Quality

Improperly designed and maintained roads are usually the main cause of stream sedimentation. Road decommissioning under this alternative would result in no change in road density for the Ferris-Bugman project area. Reductions in road density by decommissioning would be offset by the proposed construction. There would be a local decrease in road density for drainage areas AM 0506 (Ferris Gulch) and AM 0509 (Applegate River) which have the highest road densities of all the drainage areas in the project area. There would be a local increase in road density for drainage area AM 0512 (Slagle Creek) which has the smallest road density of all the drainage areas in the project area.

Project Effects on Road Density (miles/sq. mile)

Drainage Area	Before Project	After Project
AM 0503	3.5	3.5
AM 0506	5.0	4.4
AM 0509	4.4	4.1
AM 0512	2.2	2.8
AM 0327	3.7	3.7
AM 0333	2.3	2.3
AM 0336	2.4	2.4
Ferris-Bugman	3.4	3.4
5th Field Watershed	4.0	4.0

The proposed construction of 7.1 miles of new permanent road might initially produce some sediment, but the new road would be located near the top of a ridge and away from any riparian areas. The new road would be surfaced with crushed rock, fill slopes would be seeded and mulched, adequate drainage structures would be designed so there would be no direct route for sediment to reach streams, and the road would be gated year round to restrict use. If the road is properly constructed, there would probably be no adverse effect on the stream systems below the road.

About 18 miles of road renovation, maintenance and drainage improvement, as well as log hauling could cause a short term increase in fine sediments. Road renovation, maintenance, and drainage improvement is intended to reduce actual and potential erosion, potential road failure, and the resulting stream sedimentation. During road work, sediment control measures would be used to minimize or prevent sediment delivery to streams. Overall, there should be a long term decrease (improvement) in stream sedimentation rates within the project area due to less roads (in high road density areas), improved road drainage, and renovated existing roads.

Project Effects on Hydrologic Recovery

Analysis Area	Percent of Project Area Hydrologically Recovered	
	Before the Project	After the Project
Ferris-Bugman	77.2	75.3 to 72.9
Middle Applegate Watershed	82.1	81.6 to 81.0

The closing of 4.2 miles of road with gates and barricades would help reduce sediment input by restricting traffic use on those roads. This is especially important during the winter season when erosion potential and sediment production is highest, and would be greatly increased by road traffic. Therefore, closing these roads would result in a long term decrease in sediment production.

There would be a short term increase in soil movement along temporary spur roads, skid trails, and on cable yarding corridors before disturbed soils stabilize. However, locating temporary roads on or near

ridges, decommissioning temporary roads, seeding, mulching, and water barring skid trails, and establishing Riparian Reserves would reduce or prevent sediment from reaching streams.

The proposed action would have no negative effect on the water quality of the Applegate River (a 303(d) listed water body) or other stream systems in the project area due to the implementation of riparian reserves, project design features, and best management practices. The reduction in sediment delivery through road improvements and decommissioning would cause an overall reduction in stream sediment levels. The establishment of Riparian Reserves would protect riparian vegetation which provides stream shading. However, this alternative would probably have no impact on water temperatures in the Applegate River.

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Stream Flow Regime

The road density would remain unchanged at the project and the 5th Field Watershed level. This would result in no noticeable effect on peak flows compared to the current condition.

Soil compaction may result in a slight increase in surface runoff within individual harvest units. The spatial scattering of harvest units across the landscape would limit the effects of compaction to these localized areas. This spatial separation of harvest units and the existence of Riparian Reserves would help to capture and reduce potential runoff and filter any sediment it may be carrying.

Silvicultural treatments would occur on approximately 1,860 acres within the project area. A variety of silvicultural treatments are planned within the project area and even within harvest units. The resulting canopy closures would be variable across the project area. The table below shows the predicted effects of the project on hydrologic recovery.

This estimate was done using the same procedure described in Chapter 3. The prediction is based on the worst case scenario in which canopy closures within the harvest units would be reduced from full hydrologic recovery (70 percent canopy cover or greater) to between 60 and 40 percent. About three-fourths of the project area would still be at full recovery. This is well within the range of natural variability for this area. Under natural conditions, when fire return intervals where more frequent, canopy cover varied across the area and was likely more open. The loss of vegetative cover from this alternative would result in no noticeable increase in peak flows.

Compaction, high road densities, and vegetation removal could combine to increase peak flows more than the individual impact of each factor. The exact effect this would have on the stream channels is unknown. However, any increase in peak flow would likely be within the natural range of variability for this area. Extreme increases are unlikely due to the spatial scattering of the treatment areas, the use of silvicultural prescriptions which do not create large openings, and the existence of Riparian Reserves.

OHV Use

OHVs include motorcycles, all terrain vehicles (ATVs), and 4WD vehicles that are driven off existing roads. Users of OHVs form their own roads and trails by repetitive use that wears down the surface cover. Rutting is common and may form channels where water can flow. Erosion is in two forms: mechanical detachment and concentrated flow of surface water (Maurer and Glover 1995). OHV induced erosion has been observed in the project area. The closing of OHV use on the proposed new

roads, decommissioned roads, and closed roads would limit the area available for OHV use and decrease the erosion and sediment production. The new roads only cross dry draws, well away from any active streams.

Direct and Indirect Effects of Alternative 3, Proposed Action With No Transportation Management

Soils

Soils in the project area are generally stable and the landslide hazard is considered low. Areas of high landslide potential have been avoided or included in Riparian Reserves. Harvest units would be scattered across the project area in a patchy network. Soil disturbance would be limited to these localized areas with only a fraction of soils within each harvest unit disturbed. There would be no widespread areas of continuous soil disturbance.

All tree harvesting using tractors would be accomplished using designated skid trails resulting in the compaction of approximately 12 percent or less of the unit (Froehlich 1981). Cable and helicopter yarding would result in less soil disturbance. Cable yarding subjects up to seven (7) percent of the unit to severe disturbance (Smith 1979). Helicopter yarding would subject about one (1) percent of the unit to severe disturbance (Klock 1975). Based on Table 1 in Appendix A, if the most impacting method of yarding was used for each harvest unit, the estimated amount of soil compaction resulting from timber harvest would be 87 acres or seven percent of the total treatment area (within harvest units). Helicopter landings and temporary spur roads would add about seven (7) acres. The combined acres would result (in the worst case scenario) in the compaction of about one (1)% of the Ferris Bugman project area and 0.11% of the Middle Applegate 5th field watershed. This is the maximum amount of compaction that would occur, and almost certainly a smaller part of the Ferris Bugman area would be compacted. It is unlikely that there would be any noticeable effect from this small amount of disturbance.

Water Quality

Improperly designed and maintained roads are usually the main cause of stream sedimentation. About 18 miles of road renovation, maintenance and drainage improvement, as well as log hauling could cause a short term increase in fine sediments. Road renovation, maintenance, and drainage improvement is intended to reduce actual and potential erosion, potential road failure, and the resulting stream sedimentation. During road work, sediment control measures would be used to minimize or prevent sediment delivery to streams. Overall, there should be a long term decrease (improvement) in stream sedimentation rates within the project area due to less roads (in high road density areas), improved road drainage, and renovated existing roads.

There would be a short term increase in soil movement along temporary spur roads, skid trails, and on cable yarding corridors before disturbed soils stabilize. However, locating temporary roads on or near ridges and water barring skid trails, and establishing Riparian Reserves would reduce or prevent sediment from reaching streams.

The proposed action would have no negative effect on the water quality of the Applegate River (a 303(d) listed water body) or other stream systems in the project area due to the implementation of riparian reserves, project design features, and best management practices. The reduction in sediment delivery through road improvements would cause an overall reduction in stream sediment levels. The

establishment of Riparian Reserves would protect riparian vegetation which provides stream shading. However, this alternative would probably have no impact (good or bad) on water temperatures in the Applegate River, and flow regulation would continue due to the Applegate Dam.

Stream Flow Regime

Soil compaction may result in a slight increase in surface runoff within individual harvest units. The spatial scattering of harvest units across the landscape would limit the effects of compaction to these localized areas. This spatial separation of harvest units and the existence of Riparian Reserves would help to capture and reduce potential runoff and filter any sediment it may be carrying.

Silvicultural treatments would occur on approximately 1200 acres within the project area. A variety of silvicultural treatments are planned within the project area and even within harvest units. The resulting canopy closures would be variable across the project area. The table below shows the predicted effects of the project on hydrologic recovery.

Project Effects on Hydrologic Recovery

Analysis Area	Percent of Project Area Hydrologically Recovered	
	Before the Project	After the Project
Ferris-Bugman	77.2	76.0 to 74.4
Middle Applegate Watershed	82.1	81.8 to 81.4

The prediction is based on the worst case scenario in which canopy closures within the harvest units would be reduced from full hydrologic recovery (70% canopy cover or greater) to between 60 and 40%. About three-fourths of the project area would still be at full recovery. This is well within the range of natural variability for this area. Under natural conditions, when fire return intervals where more frequent, canopy cover varied across the landscape and was likely more open. The loss of vegetative cover from this alternative would result in no noticeable increase in peak flows.

Compaction, high road densities, and vegetation removal could combine to increase peak flows more than the individual impact of each factor. The exact effect this would have on the stream channels is unknown. However, any increase in peak flow would likely be within the natural range of variability for this area. Extreme increases are unlikely due to the spatial scattering of the treatment areas, the use of silvicultural prescriptions which do not create large openings, and the existence of Riparian Reserves.

E. DENSE STANDS/FOREST HEALTH IMPACT ANALYSIS

Direct, Indirect, and Cumulative Effects of Alternative 1 (No Action)

With no action, forest stands would remain overstocked and individual tree vigor and growth would remain poor. The average dominant tree 10-year radial growth is 0.45 inches or 0.90 inches diameter growth per decade in the Appleseed project area. During 1997 an 18 tree sample of dominant trees in the Ferris Bugman project area showed an average radial growth per decade of 0.4 inches. Dominant tree 10-year radial growth ranged from 0.1 to 0.95 inches. When radial growth is less than 0.5 inches per decade, pine trees cannot pitch-out bark beetles and tree mortality results (Dolph, 1985). Tree

mortality represents a reduction in stand volume production and a loss of revenue and poor forest health.

Without action, forest structure and species composition could not be controlled. On pine sites, Douglas-fir would remain the most prevalent species and stands would remain in the stem exclusion stage of development if mortality does not occur. Old-growth ponderosa pine and Douglas-fir trees with seedlings through poles within their dripline would continue to die from competition for water. Pine species would continue to decline in number from competition with Douglas-fir because of their shade intolerance. Leaf area index may decline as live tree crowns decrease in size from tree competition. With large tree mortality, forest stand structure would gradually shift to the understory reinitiation stage.

No action contradicts the Medford District Resource Management Plan forest condition objectives in regard to forest health. The plan states that management emphasis be placed on treatments and harvests that restore stand conditions and ecosystem productivity.

Cumulative Effects

With no forest stand density reduction, slow tree growth and vigor would result in individual tree and perhaps stand mortality. If severe stand mortality results, silvicultural options in the future would be reduced. It is possible that after bark beetle attack, there may be less than 16 trees per acre remaining in some forest stands. If this happens we would not be able to harvest live trees for approximately 30 to 50 years and spotted owl habitat would be degraded. Hardwood tree, shrub and forb species would become more abundant and provide forage and hiding cover for big game animals. Song bird habitat would be enhanced also.

Pine species would continue to decrease in number if large openings are not created for these shade intolerant species. The more shade tolerant Douglas-fir would continue to dominate the forest.

Where dense forest stands persist overtime, canopy closure would remain at 90 to 100%. When tree mortality is singular or in small patches, canopy closure would be approximately 50 to 80%. Where large patches of trees die, canopy closure would be 0 to 40%.

Fire hazard would increase with the abundance of dead vegetation and ladder fuels.

Direct, Indirect and Cumulative Effects of Alternative 2, Proposed Action with Transportation Management

The proposed prescriptions (located in EA file) to be applied across the forest landscape are based upon the present vegetation structure, species composition, aspect, and vegetation condition class. The prescriptions would allow for the creation of desired old-growth forest structure and the desired tree series over time. Trees would then be vigorous enough to withstand bark beetle attacks. Leaf area index values should begin to increase after the stands are thinned. With the group selection prescription, pine species would be favored to increase their prevalence in the forest stands. Through forest stand treatments, tree densities are reduced, thus allowing for improved individual tree vigor and growth, and improved forest health. The various prescriptions meet the specifications of restoration thinning and density management as outlined in the Medford District Resource Management Plan.

In addition to the commercial treatment, 360 acres would be precommercially thinned. There are 28 Operations Inventory units (see Appendix A), or portions of units, that are in need of precommercial thinning. The excess, small diameter trees less than 8 inches DBH would be cut from under the drip lines of old-growth trees to increase survival. Elsewhere the excess tree stems would be thinned to a desired stocking level to improve the growth and vigor of the remaining trees. Achieving the desired species composition goals is of equal importance.

Cumulative Effects

By utilizing various landscape prescriptions, future silvicultural options would be greater. The majority of forest stands to be commercially thinned could be commercially thinned once again, or regeneration harvested in 10 to 40 years. Pole sized stands could be entered in 30 to 60 years. The prescriptions would also assume that drought resistant conifer species such as ponderosa pine and incense cedar would be present in future stands where appropriate in regard to site conditions. This is critical to forest health. Tree species would be favored on sites where they are best adapted.

There is a wide variety of silvicultural prescriptions because of the wide variety of present day forest stand structure. A variety of prescriptions are needed to create future old-growth forest stand structure. Approximately 86 acres of moist Douglas-fir, 420 acres of pine series forest, 1,019 acres of dry Douglas-fir forest, 39 acres of poles, 118 acres of wildlife connectivity corridors, and 174 acres of Douglas-fir regeneration harvest area would be treated. As the aspect and microclimate change within a forest stand, the tree plant association usually changes. There may be pine trees within a dry Douglas-fir forest that may need releasing according to the pine prescriptions. Within the pine series forest patches of Douglas-fir may be encountered that would be treated according to the dry, Douglas-fir prescription. Forest stands would vary and the tree plant associations would be treated by the respective prescriptions. There is within stand variation in canopy closure and this variation would remain across the landscape. On Douglas-fir sites, including pole stands, canopy closure would be 50 % or greater. On pine and Douglas-fir regeneration harvest sites, canopy closure would be 20 to 40 %. Pine species are shade intolerant so canopy closure must be lower. Wildlife connectivity corridors would have 60% canopy closure or greater.

Precommercial thinning would be performed on 360 acres to achieve species composition goals and to improve the growth and vigor of the younger trees. Precommercial thinning would also help to reduce the fire hazard.

If surrounding private lands are clearcut, our forest stands would be the only patches of forest left to provide late-successional habitat. Surrounding BLM lands would be managed with similar prescriptions to assure forest health.

Direct, Indirect and Cumulative Effects of Alternative 3, Proposed Action With No Transportation Management

The no new roads alternative would eliminate vegetation management on 661 acres of forest land (36% reduction from the Variable Prescription alternative). The effects on this 661 acres would be the same as the No Action alternative. Forest health would remain poor as well as individual tree vigor. Precommercial vegetation management would be eliminated in 16 Operations Inventory units (Units 127282, 127284, 157436, 157441, 157445, 157450, 157452, 157453, 157463, 157842, 157850, 157851,

157858, 157868, 158426, and 158448) or approximately 230 acres (a 64% reduction in precommercial management). Precommercial thinning would only occur in 12 Operations Inventory units or 130 acres (Units 156601, 156614, 156647, 157344, 157369, 157370, 157374, 157833, 157986, 158012, 158322, and 158430) if no new roads are built.

A 36% reduction in commercial vegetation management and a 64 % reduction in precommercial management would result across the landscape. This could cancel out the effects of BLM's vegetation treatments elsewhere in the project area. Cumulative effects in the no treatment areas would be the same as in the No Action alternative.

F. FUELS IMPACT ANALYSIS

Direct, Indirect and Cumulative Effects of Alternative 1 (No Action)

The current trend of increasing stand density, which results in increased mortality to the timbered stands, would continue. Ladder and surface fuels would also increase within the stands. Increasing stand densities and fuel loadings would increase the chance that more acres would burn in high intensity fires within the project area. Fire fighter safety would continue to be an issue as well as the potential of resource damage.

The objectives of improving grasslands would not be achieved. In addition, the restoration of shrublands and oak woodlands would not be achieved.

Air quality would be impacted in the event of a large wildfire. Emissions from wildfires are significantly higher than from prescribed burning. The wildfires in southern Oregon in 1987 emitted as much particulate matter as all the burning that occurred within the state that year.

Direct, Indirect and Cumulative Effects of Alternative 2, Proposed Action with Transportation Management

In the short term , 10 to 25 years, commercial thinning would create surface fuels greater in most areas than current, untreated, levels. Fuel amounts are measured in tons per acre for different size material. Materials up to 3 inches in diameter have the greatest influence on the rate of spread and flame length of a fire, therefore directly impacting fire suppression efforts. It is anticipated that fuel loadings after logging would be increased by approximately 3-15 tons per acre. This would change the existing fuel model of most of the timbered stands. In some cases, higher rates of spread and greater flame lengths would occur. Under some weather conditions, direct attack of a fire would be limited and indirect measures would have to be taken. This would, in turn, increase the size and cost of a wildfire.

Logging slash, if not treated, would also increase the duration and intensity of a ground fire. Increased duration and intensity would cause increased mortality of smaller diameter overstory trees. To mitigate the impacts of residual logging slash on the fuel hazard of the harvest units, fuels would be treated on all the acres harvested under this proposed project.

These alternative would reduce the overall density (aerial fuels), ladder fuels and surface fuels in the timber stands proposed for treatment. This in turn would reduce fire behavior such as flame length for example. By altering fire behavior, the duration of a fire and the amount of acres burned in high intensity fires would be reduced. This change in fire behavior would reduce the mortality of conifers in

the event of a wildfire.

The objectives of improving grasslands and the restoration of shrublands and Oak woodlands would be achieved under these alternatives. The high fire hazard which exist in these areas would also be greatly reduced.

With the proposed ridge roads the response time of suppression forces to this area would be decreased in the event of a wildfire. Quick response time is a major factor in insuring wildfires are kept small in size

Direct, Indirect and Cumulative Effects of Alternative 3, Proposed Action, with No Transportation Management

Access to an area plays a critical role in planning fuels treatments. The risk of escape is a major factor when conducting burning operations, especially underburning and broadcast burning. Without vehicle access, there is an increased risk of escape due to the lack of availability and mobility of people, equipment, and water. Limited or no access would preclude the use of prescribed burning. Under this alternative, no road would be built along the major ridge line that separates the Slagle Creek drainage and Humbug Creek. Due to the lack of access into this area, the non-commercial units N1, N2, N3, N4, and N5 would not be treated. In addition, approximately 661 acres of commercial timber land would also not be treated. Not treating the fuels along this ridge line greatly reduces its use as an effective control point in the event of a wildfire. Other objectives (improving grasslands & restoring shrublands/oak woodlands) for treating these units would also not be meet.

Air Quality

Alternatives 2 and 3 both propose to use prescribed fire. Consequently, there would be some smoke related impacts. Prescribed burning is not expected to affect visibility within the Crater Lake National Park and neighboring wilderness smoke sensitive Class I areas (Kalmiopsis and Mountain Lakes) during the visibility protection period from July 1 to September 15. Prescribed burning is not routinely conducted during this period primarily due to the risk of an escaped wildfire.

The greatest potential for impacts from smoke intrusions would be caused by underburning, and would affect localized drainages within and adjacent to the project area. Underburning requires a low intensity burn that would not have the energy to lift the smoke away from the project site. Smoke retained on site could be transported into portions of non-attainment areas if it is not dispersed and diluted by anticipated weather conditions. Localized concentration of smoke in rural areas away from non-attainment areas may continue to occur during prescribed burning operations.

Cumulative Effects

Prescribed burning emissions, under Alternatives 2 and 3 are not expected to adversely effect annual PM10 attainment within the Grants Pass, Klamath Falls, and Medford/Ashland non-attainment areas. Any smoke intrusions into these areas from prescribed burning are anticipated to be light and of short duration.

Since 1995 fuel hazard reduction work has occurred in the Middle Applegate Watershed. To date, three landscape projects within this watershed have been implemented. These projects are the Lower and Middle Thompson Creek projects and the Forest Creek project. Along with these projects, a small

amount of acreage has been treated in the Appleseed project area which includes the Ferris Bugman project area. To date, approximately 7,414 acres have been treated within the Middle Applegate Watershed. Of these acres 2,316 have been on non-commercial timber land. Treatments include manual, mechanical and prescribed burning. In addition to these acres, approximately 4,400 acres are under contract to be treated in this watershed.

G. FISH/RIPARIAN RESERVES IMPACT ANALYSIS

Direct, Indirect and Cumulative Effects of Alternative 1 (No Action)

Riparian Reserves

With no on-the-ground actions, there would be no direct improvements or damage to Riparian Reserves.

Indirect Effects

As described in the "Fire" and "Hydrology" sections, without on-the-ground actions, fuel loading in both the uplands and the outer portions of many Riparian Reserves would continue to keep high- and medium-hazard Riparian Reserves at risk for severe, stand-replacing fires. Consequently, small streams would continue to be at risk for sudden changes in peak flow, sediment input, and down-cutting due to concentrated runoff from wildfires, loss of fallen wood on the forest floor, and loss of protective duff layers. Although some Riparian Reserves in the project area are healthy and provide good habitat, others suffer from the effects of a century of fire suppression. In forest stands where fire suppression has artificially increased conifer densities, trees would continue to grow very slowly, perpetuating the lack of late-successional riparian habitat. Tree species diversity in Riparian Reserves would decline over time, as Douglas-fir continued to invade and out-compete oaks and madrones for sunlight and water. Competition for water in dense stands would continue to stress large-diameter trees (both hardwood and conifer), making them more susceptible to disease and insect outbreaks. Along some streams, the dense forest canopy would continue to shade out riparian shrubs and forbs. All of these factors would impede natural stream functions and processes and ultimately reduce habitat and resources for aquatic animals and riparian-dependant wildlife.

Cumulative Effects

Riparian Reserve habitat and condition would remain the same. The ability of Riparian Reserves to withstand forest fires and control sediment impacts would remain compromised. In a natural system, this might not be an issue, because wildlife could move to better habitat elsewhere, plants could re-seed from adjacent areas, and aquatic animals would also repopulate. However, the residential, commercial, agricultural and transportation impacts on private land in valleys, rivers, and estuaries as well as nearby mountain streams limit animal migration, block fish passage, divert water, and in general have seriously reduced riparian habitat. Consequently, severe fires or other landscape-level changes due to inaction could further impact already-stressed riparian systems.

Fish and Other Aquatic Organisms

Without on-the-ground actions, there would be no direct benefits or harm done to fish and other aquatic organisms.

Indirect Effects

In addition to the problems described in "Riparian Reserves" above, unimproved roads would continue to channel water, increasing peak flows and fine sediments in some intermittent streams until repaired

under the normal (but slow) maintenance schedule. The risk of crossing failures would remain until culverts were replaced to handle 100-year flood events. These problems would continue to exacerbate the sediment problems in local streams. Fine sediments limit habitat and food availability for fish and other aquatic organisms.

Cumulative Effects
Stream condition and fish habitat would remain the same, and could decline if severe forest fires limit the ability of aquatic organisms to respond to continued habitat impacts from rural residences, highways, water withdrawals, agriculture, and industrial harvest activities in the Applegate basin.

Direct, Indirect and Cumulative Effects of Alternative 2, Proposed Action with Transportation Management

Riparian Reserves
Since so few Riparian Reserves would be treated, and the treatments would be so slight, it is doubtful that the treatments would substantially improve riparian habitat in the Middle Applegate Watershed. However, habitat and function should be improved in those few treated Reserves. These treated Reserves should provide more habitat diversity, refugia in the case of large fires or other landscape-level changes, and better sediment control for downstream fish habitat.

For a discussion about the linkage of the proposed action to the objectives of the Aquatic Conservation Strategy see Appendix H.

Indirect Effects
The upland treatments would reduce wildfire risk, although untreated Reserves would still be at risk under certain fire conditions. (The shape and slope of some stream canyons can create a "chimney" effect.) As described in the "hydrology" section, upland thinning might improve groundwater availability (although within the range of natural variability). Although slight, a little bit more groundwater would improve or prolong humidity in some Riparian Reserves. This humidity creates microhabitats for riparian-dependant plants and animals (like bigleaf maple and salamanders), or extends the growing season for others. Upland conifer thinning, prescribed fire and shrub/grass/oak woodland treatments should improve overall watershed health, which ultimately benefits aquatic systems by restoring more natural ecological processes.

Cumulative Effects
Given all the current and past impacts to riparian areas on both public and private land throughout the watershed (e.g. highways, residences, fire suppression, commercial businesses, farming, river channelization, gravel mining, logging, gold mining) it is doubtful that the small amount of thinning in Riparian Reserves would improve overall riparian health. However, every little bit of restoration helps.

Fish and Other Aquatic Organisms
This project would have no direct effect on fish.

Indirect Effects
The increased large woody debris in treated Riparian Reserves would restore natural sediment controls in these streams. Road improvements would also reduced fine sediment runoff into to small streams.

Increased fine sediment retention and reduced runoff would consequently reduce sediment-loading in downstream fish habitat.

The possibility exists that a severe wildfire could contribute massive amounts of fine sediments to downstream fish habitat. The risk is reduced with reduced hazard of wildfire. More streamflow means expanded habitat or water available for a wider array of aquatic organism.

Cumulative Effects

Essentially the same as Alternative 1. The biggest difference is that the reduced wildfire impacts would lessen the risk of severe habitat impact to downstream fish. Road decommissioning and drainage improvements would cumulatively reduce sediment sources on many streams, eventually improving downstream habitat for fishes and other aquatic organisms. However, reduced sediment input may be offset by other human-caused problems as the valley population increases: continued floodplain development, industrial timber harvest, increased OHV erosion in the uplands, or road construction on private land. Riparian Reserve treatments would have no negative effect on fish. Benefits would be offset by the cumulative effects of problems elsewhere in the basin.

Threatened and Endangered Aquatic Species and Essential Fish Habitat

There would not be any impacts from upland logging on coho salmon, coho critical habitat or essential fish habitat. Due to the distance of treatment areas from coho habitat; the strict fine-sediment control techniques on all proposed activities; buffering nature of all Riparian Reserves; intense scrutiny, careful design and limited acreage of Riparian Reserve treatments; protection of all possible unstable soil areas; new road location and design; and the care to mimic natural fire conditions with prescribed burning; natural ecosystem processes should be improved and no fine sediments, flow problems or other potentially harmful physical changes should negatively impact stream conditions and coho habitat. In addition, this project was reviewed by an interagency review team of fish biologists (SW Oregon Level One Team), which agreed that this project would not cause "take" of coho salmon or its habitat.

The actions proposed in Alternative 2 were submitted to NMFS through informal consultation which BLM determined that this project is "Not Likely to Adversely Affect" Southern Oregon Northern California coho salmon, as defined by the Endangered Species Act, as amended.

Direct, Indirect, and Cumulative Effects of Alternative 3, Proposed Action with No Transportation Management

Same as Alternative 2, with the exception that fewer roads mean that the potential for new sediment sources is reduced and there is a very slight possibility of slowly improving aquatic and riparian habitat in the Middle Applegate watershed.

Under this alternative, no silvicultural treatments would take place in Riparian Reserves. Therefore, there would be no change in Riparian Reserve condition.

Indirect Effects

Trees in overstocked riparian areas, especially those with many small diameter Douglas-fir, would continue to grow very slowly in Riparian Reserves. Accelerated mortality of large-diameter trees (both hardwood and conifer) would continue. Channel condition and fish habitat should slowly improve, as

both small and large snags naturally fall into stream channels over time. Fuel loading in the outer portions of many Riparian Reserves, as well as in the uplands, would continue to keep high- and medium-hazard Riparian Reserves at risk for severe, stand-replacing fires. Consequently, small streams would continue to be at risk for sudden changes in peak flow, sediment input, and downcutting due to concentrated runoff from wildfires. Roads would continue to channel water, increasing peak flows and fine sediments until repaired under the normal (but slow) maintenance schedule. The risk of crossing failures would remain until culverts were replaced to handle 100-year flood events.

Cumulative Effects

Stream condition and fish habitat over the entire project area would remain essentially the same. Improvements with time may be offset by disturbance from increasing rural residential construction and road building. The risk of severe fires would continue to put instream and riparian habitat at risk for sudden and severe changes in peak flow, sediment, and channel change.

H. WILDLIFE IMPACT ANALYSIS

Direct, Indirect, and Cumulative Effects of Alternative 1 (No Action)

Since no projects are planned under this alternative, disturbances and vegetative succession would occur naturally (except for fire suppression), and wildlife populations and distributions would change in response to these processes. Exclusion of natural fire regimes across the landscape would continue the trend toward loss of some plant communities within open pine, oak woodlands, and grasslands. This alternative would continue to facilitate a high fire-hazard.

Direct, Indirect, and Cumulative Effects of Alternative 2, Proposed Action with Transportation Management

This alternative would reduce the conifer density by thinning the vegetative profile (specified prescriptions) in management units across the landscape. The 15% late successional habitat reserve has been identified with a process listed in Appendix W. The location of the reserves are shown on a map in the EA file.

The effects of timber harvest and fire management activities on wildlife/wildlife habitat are discussed in Chapter 4, pages 51-65, and other portions of the BLM Medford District Resource Management Plan, October 1994. The effects that are more site/drainage area specific are addressed further in the discussion on Direct Effects in Appendix W.

Alternative 2 would treat 661 more acres than Alternative 3 due to increased access from new road construction. Three direct adverse effects on wildlife from new road construction and associated treatments would be 1) vehicle and human disturbance 2) fragmentation of habitat 3) increased short-term and long-term loss of suitable habitat for late-successional species such as the spotted owl. The benefits to wildlife of the density thinning treatments would be the reduction of fire hazard and the improvement of forest health, including the encouragement of large tree growth. Further discussion on the effects of new road construction on wildlife/habitat is included in Direct Effects of New Road Construction in **Appendix W**

Threatened/Endangered Species - Northern Spotted Owl

The northern spotted owl is listed as a threatened species under the auspices of the Endangered Species

Act of 1973, as amended. Due to habitat modification that would occur under Alternatives 2 and 3, BLM is required to formally consult with the U.S. Fish and Wildlife Service because the proposed actions would adversely affect northern spotted owls.

Alternative 2 would modify approximately 952 acres of suitable northern spotted owl habitat (i.e., nesting/roosting/foraging habitat) and 523 acres of dispersal habitat. Approximately 952 acres of the suitable habitat would be rendered unsuitable. Of this total, approximately 647 acres would be commercially thinned and is expected to again provide suitable habitat in 10-30 years if it remains unharvested for this period of time. In the interim, these acres would provide dispersal habitat. The remaining acres would be pine or regeneration treatments. Approximately 305 acres of suitable habitat with these prescriptions would provide neither suitable nor dispersal habitat in the long-term.

Approximately 310 acres of dispersal habitat to be harvested by the thinning prescriptions would retain dispersal habitat function after the harvest. Approximately 213 acres of dispersal habitat with pine or regeneration prescriptions would be lost as dispersal habitat in the long-term.

Effects of Alternative II on Northern Spotted Owl Suitable Habitat				
Existing Suitable habitat	Amount Suitable Treated	Loss of Suitable Habitat	Amt. Treated which Becomes Dispersal Habitat	Amt. Treated Loss as Suitable or Dispersal
1,903 ac.	952 ac. (50%)	952 ac. (50%)	647 ac. (34%)	305 ac. (16%)

Effects of Alternative II on Northern Spotted Owl Dispersal Habitat			
Existing Dispersal Habitat	Amount Dispersal Treated	Amt. Treated Remains Dispersal Habitat	Loss of Dispersal Habitat
1,992 ac.	523 ac. (26%)	310 ac. (15%)	213 ac. (11%)

The habitat loss described above is expected to affect the ability of spotted owls within and adjacent (within 1.3 miles) to the project area to successfully reproduce and would result in the "incidental take" of these owls. Formal consultation for the northern spotted owl with the U.S. Fish and Wildlife Service (USF&WS), is completed and the Biological Opinion is in the EA File. May affect projects would meet the mandatory terms and conditions of the USF&WS Biological Opinion issued as a result of consultation.

Special Status Species

Alternative 2 would impact special status species (SSS) in both the short and the long term, due to the overall change in stand structure, specifically the reduction in canopy closure and snags. Those species which are likely to be most affected by the reduction in canopy closure are northern spotted owl, northern goshawk, and great gray owl. Species that would be the most affected by the reduction in snags within the forested matrix are the pileated woodpecker and northern saw-whet owl.

The following are SSS known to be present in the project area and would be adversely affected by the proposed projects: northern spotted owl (FT), long-legged myotis (BS), fringed myotis (BS), Yuma myotis (BS), western bluebird (BA), pileated woodpecker (BA), and great gray owl (BA). Also, under the auspices of the NWFP, the great gray owl is a Survey and Manage species.

All species would be impacted due to the overall change in stand structure, specifically the reduction in canopy closure and/or snag density in the mixed conifer plant community. All of the species would be affected in their ability to feed, breed and shelter. The PDFs in Chapter 2 provide some degree of site specific mitigation for these species. Impacts to the bat species would be mitigated somewhat by the retention of modest numbers of snags. Impacts to northern spotted owls and great gray owls would be mitigated by the retention of core areas around nest sites/activity centers. Retention of modest numbers of snags would also mitigate impacts to western bluebirds.

Great gray owl - Survey and Manage Nesting habitat for this species is typically mature/old-growth forest which is adjacent to meadows or clear-cuts used for foraging habitat. To date, one great gray owl nest site has been located in the project. All nest sites found prior to the sale date would each receive approximately 125 acre protection zones, in accordance with the Amended NWFP, NWFP, and RMP guidelines.

Mollusks- Survey and Manage No survey and manage mollusks have been found in the project area. Any Survey and Manage mollusk species which are located would receive protection as outlined in the Management Recommendations for Survey and Manage Terrestrial Mollusks, version 2.0, dated, Oct., 1999.

Indirect Effects

Proposed road construction under Alternative 2 would eliminate approximately 42 acres of the various habitat types present in the project area. The roads, however, would be routed to avoid sensitive wildlife areas. In relation to the size of the project, the loss of this amount of habitat would be a minor impact to wildlife. A greater impact would be the long-term disturbance that could occur if the barricades/gates proposed for the roads are breached on a regular basis.

Other indirect effects associated with the proposed project, such as site preparation or planting, would have only minor impacts on wildlife because these actions would occur in areas already disturbed by the major actions, i.e., timber harvest or brushland/oak-woodland treatment.

Direct, Indirect, and Cumulative Effects of Alternative 3, Proposed Action with No Transportation Management

Threatened/Endangered Species - Northern Spotted Owl - Direct Effects

Without new road construction, several treatment areas would be dropped due to lack of logging access. This would result in dropping 661 acres from the planned treatments. The amount of suitable spotted owl habitat loss would be reduced by approximately 432 acres. The total suitable habitat loss in the project area for Alternative3 would be 520 acres (27%), in contrast to 952 acres (50%) under Alternative 2.

Alternative 3 would limit disturbance to nearby owl cores caused by the additional people, vehicles,

OHV, and trail bikes associated with increased access to the forest from roads. Roads reduce and fragment wildlife habitat, causing a detrimental cumulative effect as more are added. Fragmentation adversely affects wildlife species such as the spotted owl which are dependent on late successional habitat.

The trade-off that would result from dropping 633 acres of treatment from the project is that fire hazard would remain high, and forest health would not be improved through treatments in those areas. One objective of density thinning is to encourage the growth of large trees, which would result in a long-term benefit to late-successional wildlife species if additional harvests do not occur.

Effects of Alternative III on Northern Spotted Owl Suitable Habitat				
Existing Suitable habitat	Amount Suitable Treated	Loss of Suitable Habitat	Amt. Treated which Becomes Dispersal Habitat	Amt. Loss as Suitable or Dispersal
1,903 ac.	520 ac. (27%)	520 ac. (27%)	318 ac. (16 %)	202 ac. (11%)

Effects of Alternative III on Northern Spotted Owl Dispersal Habitat			
Existing Dispersal Habitat	Amount Dispersal Treated	Amt. Treated Remains Dispersal Habitat	Loss of Dispersal Habitat
1,992 ac.	344 ac. (17%)	228 ac. (11%)	116 ac. (6%)

Special Status Species
Alternative 3 would limit disturbance to wildlife caused by the additional people, vehicles, OHV, and trail bikes associated with increased access to the forest from roads. Roads reduce and fragment wildlife habitat, causing a detrimental cumulative effect as more are added. Fragmentation adversely affects special status species such as the spotted owl, great gray owl, and goshawk which are dependent on late successional habitat.

The trade off that would result from dropping 661 acres of commercial treatment from the project, is that fire hazard would remain high, and forest health would not be improved through treatments in those areas. Under this Alternative, there would be a loss to late-successional wildlife species of the benefit of encouragement of large tree growth that would result from the thinning treatments.

Survey and Manage Species
The mitigating measures, project design features, and surveys for Amended NWFP ROD Survey and Manage species referred to in Alternative 2, would also apply to Alternative 3.

Indirect Effects
Any indirect effects associated with the proposed project, such as site preparation or planting, would have negligible impacts on wildlife, and the project design features would further minimize any of these impacts.

Cumulative Effects: For a discussion of wildlife cumulative effects see **Appendix W**.

I. BOTANY IMPACT ANALYSIS

Direct, Indirect, and Cumulative Effects of Alternative 1 (No Action Alternative)

The no action alternative would have no direct affect on the continued persistence of the Federally listed *Fritillaria gentneri*, the Bureau Special Status Plants *Arabis modest, Clarkia heterandera, Cypripedium fasciculatum, Festuca elmeri, Meconella oregana, Mimulus bolanderi, and Sedum oblanceolatum*, or the Northwest Forest Plan Species, *Bryoria tortuosa* and *Dendriscocaulon intricatulum* within the confines of the Ferris Bugman Timber Sale harvest units or the proposed brushing and burn units. Detrimental indirect and cumulative effects might result if management activities allow fuel levels to accumulate to the point that a stand destroying fire occurs.

Direct, Indirect and Cumulative Effects Alternative 2, Proposed Action with Transportation Management Alternative 2 would have no direct affect on the continued persistence of the Federally listed *Fritillaria gentneri*, the Bureau Special Status Plants *Arabis modest, Clarkia heterandera, Cypripedium fasciculatum, Festuca elmeri, Meconella oregana, Mimulus bolanderi, and Sedum oblanceolatum*, or the Northwest Forest Plan Species, *Bryoria tortuosa* and *Dendriscocaulon intricatulum* within the confines of the Ferris Bugman Timber Sale harvest units or the proposed brushing and burn units.

Cypripedium fasciculatum occurs in or on the periphery of 11 proposed harvest units and two proposed burn units. With the exception of Bugman #6 (60%), the proposed harvest level in these units is 45-50 % canopy closure. This is well below the level required to provide suitable habitat for *Cypripedium fasciculatum*. The variable radius buffers around known sites should allow for the continued persistence of isolated pockets of this species, however, the reduction of canopy closure to less than 60% in the surrounding stand would greatly reduce or completely eliminate the possibility that this species would spread to other parts of the stand in the foreseeable future.

Indirect and cumulative effects would most likely be detrimental to *Dendriscocaulon intricatulum*, which typically occurs on black oak stems less than 100 years of age under fairly dense (60 -100% canopy closure) stand conditions on ridges exposed to winter fog or in riparian areas. Reduction of canopy closure to 40% in the surrounding stand would greatly reduce or completely eliminate the possibility that this species would spread to other parts of the stand in the foreseeable future.

The primary effects of road construction on the existing sites would be an increase in off road vehicle use, an increase in foot traffic, and an increased likelihood of camper or hunter caused fire. Any or all of these factors could lead to damage or loss of sites in the vicinity of the proposed road construction. These potential effects would be minimized by the stipulation that all new road construction would be closed to public access including off road vehicle use. Additional detrimental indirect and cumulative effects might result if future management activities allow fuel levels to accumulate to the point that a stand destroying fire occurs.

Direct, Indirect and Cumulative Effects of Alternative 3, Proposed Action with No Transportation Management

Alternative 3 would have no direct affect on the continued persistence of the Federally listed *Fritillaria gentneri*, the Bureau Special Status Plants *Arabis modest, Clarkia heterandera, Cypripedium*

fasciculatum, Festuca elmeri, Meconella oregana, Mimulus bolanderi, and Sedum oblanceolatum, or the Northwest Forest Plan Species, *Bryoria tortuosa* and *Dendriscocaulon intricatulum* within the confines of the Ferris Bugman Timber Sale harvest units or the proposed brushing and burn units.

Cypripedium fasciculatum occurs in or on the periphery of 11 proposed harvest units and two proposed burn units. With the exception of Bugman #6 (60%), the proposed harvest level in these units is 45-50% canopy closure. This is well below the level required to provide suitable habitat for *Cypripedium fasciculatum*. The variable radius buffers around known sites should allow for the continued persistence of isolated pockets of this species, however, the reduction of canopy closure to less than 60% in the surrounding stand would greatly reduce or completely eliminate the possibility that this species would spread to other parts of the stand in the foreseeable future.

Indirect and cumulative effects would most likely be detrimental to *Dendriscocaulon intricatulum* which typically occurs on black oak stems less than 100 years of age under fairly dense (60 -100% canopy closure) stand conditions on ridges exposed to winter fog or in riparian areas. The 100 ft. radius buffers around known sites should allow for the continued persistence of isolated pockets of this species. However, reduction of canopy closure to 40% in the surrounding stand would greatly reduce or completely eliminate the possibility that this species would spread to other parts of the stand in the foreseeable future.

Additional detrimental indirect and cumulative effects might result to both Bureau Special Status and Northwest Forest plan species if future management activities allow fuel levels to accumulate to the point that a stand destroying fire occurs.

J. SOCIAL IMPACTS

Some locals residents (letters and petitions in EA file) have issues/concerns with the proposed action and the alternative. Because many people and some environmental groups believe the impacts have significance, there have been numerous requests for BLM to prepare an environmental impact statement for this project. From review of the issues/concerns BLM believes the significant impacts (i.e., controversy, similar actions) have been addressed in the Medford District RMP/EIS.

K. CRITICAL ELEMENTS

The following elements of the human environment are subject to requirements specified in statute, regulation, or executive order and must be considered in all EAs.

Table 12: Critical Elements

Critical Element	Affected Yes	Affected No	Critical Element	Affected Yes	Affected No
Air Quality		✔ **	T & E Species		✔ *
ACECs		✔	Wastes, Hazardous/Solid		✔
Cultural Resources		✔*	Water Quality		✔ **

Critical Element	Affected Yes	Affected No	Critical Element	Affected Yes	Affected No
Farmlands, Prime/Unique		✔	Wetlands/Riparian Zones		✔ **
Floodplains		✔	Wild & Scenic Rivers		✔
Nat. Amer. Rel. Concerns		✔	Wilderness		✔
Invasive, Nonnative Species		✔**	Environmental Justice		✔

*These affected critical elements could be impacted by the implementing the proposed action. Impacts are being avoided by project design.

**These affected critical elements would be impacted by implementing the proposed action. The impacts are being reduced by designing the proposed action with Best Management Practices, Management Action/Direction, Standard and Guidelines as outlined in the Amended NWFP, RMP, and the NWFP tiered to in Chapter 1. The impacts are not affected beyond those already analyzed by the above mentioned documents.

CHAPTER V
List of Agencies and Persons Consulted

SUMMARY OF PUBLIC INVOLVEMENT

Scoping for this project began in 1997 when BLM began the process of planning restoration projects across a large portion of the Middle Applegate Watershed. BLM evaluated land, vegetation, and stream conditions and developed a plan that included thinning forests and brushlands, reintroducing prescribed fire, and reducing sediment impacts to streams. This large landscape plan was called the "Appleseed Project." In May 1999, the Appleseed Environmental Assessment (EA) was released for public review. Many Applegate residents and others took the time to write lengthy critiques of the project and the EA. A common theme was that the scope of the project was too large, making it difficult for local residents to understand what was happening on public land. In order to better explain the proposed project actions, this EA analyzes a small portion of the larger Appleseed project. Upon completion of this EA, a legal notification was placed in the Medford Mail Tribune offering a 30-day public review and comment period. For additional information, please contact Bill Yocum or Lorie List at (541) 618-2384.

DISTRIBUTION LIST AND AVAILABILITY ON THE INTERNET

This EA was distributed to the following agencies and organizations.

Applegate Partnership/Applegate River Watershed Council
Association of O&C Counties
Boise Cascade Corp.
Jackson Co. Commissioners
Jackson County Library Applegate Branch
Oregon Department Forestry
Oregon Department of Fish and Wildlife
Southern Oregon Timber Industry Assoc.
Applegate Ranger District - USFS
Audubon Society
Headwaters
Jackson County Library; Ruch
Klamath Siskiyou Wildlands Center
Oregon Natural Resource Council
Southern Oregon University
The Pacific Rivers Council

TRIBES

The Confederated Tribes
Cow Creek Band of Umpqua Indians
Confederated Tribes of Grand Ronde
Confederated Tribes of Siletz
Klamath Tribe
Quartz Valley Indian Reservation (Shasta Tribe)
Shasta Nation
Confederated Bands [Shasta], Shasta Upper Klamath Indians
Confederated Tribes of the Rogue-table Rock and Associated Tribes

AGENCIES CONSULTED

U.S. Fish and Wildlife Service
U.S. Forest Service
U.S. National Marine Fisheries Service

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GLOSSARY OF TERMS USED IN THE EA

Allowable Sale Quantity: The gross amount of timber volume, including salvage, that may be sold annually from a specified area over a stated period of time in accordance with the management plan.

Area of Critical Environmental Concern (ACEC): An area of BLM administered lands where special management attention is needed to protect and prevent irreparable damage to important historic, cultural or scenic values, fish and wildlife resources or other natural systems or processes; or to protect life and provide safety from natural hazards.

Adaptive Management Area (AMA): Landscape units designated for development and testing of technical and social approaches to achieving desired ecological, economic, and other social issues.

Commercial Forest Land: Land declared suitable for producing timber crops and not withdrawn from timber production for other reasons.

Connectivity: A measure of the extent to which conditions between late-successional/old-growth forest areas provide habitat for breeding, feeding, dispersal, and movement of late-successional/old-growth-associated wildlife and fish species.

Core Area: That area of habitat essential in the breeding, nesting and rearing of young, up to the point of dispersal of the young

Density Management: Cutting of trees for the primary purpose of widening their spacing so that growth of remaining trees can be accelerated. Density management harvest can also be used to improve forest health, to open the forest canopy, or to accelerate the attainment of old growth characteristics if maintenance or restoration of biological diversity is the objective.

Diameter At Breast Height (dbh): The diameter of a tree 4.5 feet above the ground on the uphill side of the tree.

Environmental Assessment: A systematic analysis of site-specific BLM activities used to determine whether such activities have a significant effect on the quality of the human environment and whether a formal environmental impact statement is required.

Environmental Impact Statement (EIS): A formal document to be filed with the Environmental Protection Agency that considers significant environmental impacts expected from implementation of a major federal action.

Fire regime: The type, intensity, size, and frequency of fires typical for a specific land area. The fires regime determines the scale of fire effects and the way fire influences an ecosystem.

FY: Fiscal Year

Landing: A cleared area in the forest to which logs are yarded or skidded for loading onto trucks for

transport.

Land Use Allocations: Allocations which define allowable uses/activities, restricted uses/activities, expressed in terms of area such as acres or miles, etc. Each allocation is associated with a specific management objective.

Late-Successional Reserve: A forest in its mature and/or old-growth stages that has been reserved.

LWD: Large Woody Debris

Matrix Lands: Federal land outside of reserves and special management areas that will be available for timber harvest at varying levels.

Noncommercial Forest Land: Land incapable of yielding at least 20 cubic feet of wood per acre per year of commercial species; or land which is capable of producing only noncommercial tree species.

O&C Lands: Public lands granted to the Oregon and California Railroad Company and subsequently revested to the United States.

OSHA: Occupational Safety and Health Administration

Potential Area of Critical Concern: An area of BLM administered land that meets the relevance and importance criteria for ACEC designations, as follows:
1) Relevance. There shall be present a significant historic, cultural, or scenic value; a system or process; or natural hazard
2) Importance. The above described value, resource, system, process, or hazard shall have substantial significance and values. This generally requires qualities of more than local significance and special worth, consequence, meaning, distinctiveness, or cause for concern. A natural hazard can be important if it is a significant threat to human life or property.

Precommercial Thinning: The practice of removing some of the trees of less than merchantable size from a stand so that remaining trees will grow faster.

Prescribed Fire: A fire burning under specified conditions that will accomplish certain planned objectives.

Public Domain Lands: Original holdings of the United States never granted or conveyed to other jurisdictions, or reacquired by exchange for other public domain lands.

Regeneration Harvest: Timber harvest conducted with the partial objective of opening a forest stand to the point where favorable tree species will be reestablished.

Road: A designated road is a linear "transportation facility" on which state-licensed, four wheeled vehicles can travel. By definition, these do not qualify as trails. BLM creates a road record when known dollars are spent to construct a road. This is the capitalized value. When a road is constructed, the site is altered. Alterations may include compaction of soil, interception of surface and some sub-surface

flows, etc. The site potential for forest development has been altered and the area does not function as forest land.

Wilderness Study Area: A roadless area inventoried and found to be wilderness in character, having few human developments and providing outstanding opportunities for solitude and primitive recreation, as described in Section 603 of the Federal Land Policy and Management Act (FLPMA) and in section 2(c) of the Wilderness Act of 1964.

Woodland: Forest land producing trees not typically used as saw timber products and not included in calculation of the commercial forest land ASQ.

APPENDICES

If there is any conflicting data in the body of the EA (Chapters 1-5) as compared to the following Appendix, then the body of the EA supersedes the following Appendices.

APPENDIX A
TABLE I

Proposed Action - Alternative 2 - Commercial thinning areas

UNIT	UNIT ACRES	SILVIC. METHOD 1/	YARDING SYSTEM 2/	FUELS MGT 3/	VOLUME CUT/ACRE (range)(MBF)	VOLUME CUT/UNIT (range)(MBF)
B1	44	MDF	H	HP/UB/SL	2 - 4	88 - 176
B2	4	DDF	H	HP/UB/SL	2 - 4	8 - 16
B3	8	DDF	H	HP/UB/SL	2 - 4	16 - 32
B4	32	MDF	PS/H	HP/UB/SL	2 - 4	64 - 128
B5	11	DDF	H	HP/UB/SL	2 - 4	22 - 44
B6	90	WC	PS/H	HP/UB/SL	1 - 3	90 - 270
B7	5	DDF	H	HP/UB/SL	2 - 4	10 - 20
B8	41	DDF	H	HP/UB/SL	2 - 4	82 - 164
B9	18	DDF	H	HP/UB/SL	2 - 4	36 - 72
B10A	31	DDF/MDF	H	HP/UB/SL	2 - 4	62 - 124
B10B	2	DDF	H	HP/UB/SL	2 - 4	4 - 8
B11	14	SmCT	H	HP/UB/SL	1 - 3	14 - 42
B12	31	P/DFR	H	HP/UB/SL	2 - 4	62 - 124
B13	22	P	CR/PS	HP/UB/SL	2 - 4	44 - 88
B14	41	DDF	PS/H	HP/UB/SL	2 - 5	82- 205
B15	112	DDF/DFR	PS/H	HP/UB/SL	2 - 5	224 - 560
B16	25	DDF/P	H	HP/UB/SL	2 - 4	50 - 100
S1	10	DDF	H	HP/UB/SL	2 - 4	20 - 40
S2	23	P	H	HP/UB/SL	2 - 4	46 - 92
S3a	114	P/WC	CR/PS/H	HP/UB/SL	1 - 5	114 - 570
S3b	4	WC	H	HP/UB/SL	1 - 3	4 - 12
S3c	6	WC	H	HP/UB/SL	1 - 3	6 - 18
S4	3	WC	H	HP/UB/SL	1 - 3	3 - 9
S8a	6	P	H	HP/UB/SL	2 - 4	12 - 24
S8b	142	DDF/SmCT/ P	CR/PS/H	HP/UB/SL	2 - 4	284 - 568
S8c	2	DDF	H	HP/UB/SL	2 - 4	4 - 8

UNIT	UNIT ACRES	SILVIC. METHOD 1/	YARDING SYSTEM 2/	FUELS MGT 3/	VOLUME CUT/ACRE (range)(MBF)	VOLUME CUT/UNIT (range)(MBF)
S8d	13	P/DDF	H	HP/UB/SL	2 - 4	26 - 52
S8e	2	DDF	H	HP/UB/SL	2 - 4	4 - 8
S8f	34	DDF	PS/H	HP/UB/SL	2 - 4	68 - 136
S8g	201	P/DDF/DFR	CR/PS/H	HP/UB/SL	1 - 5	201 - 1005
S8h	156	P/DDF	CR/PS/H	HP/UB/SL	1 - 4	156 - 624
S9	1	P	H	HP/UB/SL	2 - 4	2 - 4
S12a	9	P	H	HP/UB/SL	1 - 4	9 - 36
S12b	9	P	H	HP/UB/SL	1 - 4	9 - 36
S15	10	P	H	HP/UB/SL	1 - 4	10 - 40
S16	42	DDF/DFR	PS/H	HP/UB/SL	2 - 4	84 - 168
S18	8	P	H	HP/UB/SL	1 - 3	8 - 24
S19	143	DDF	CR/PS/H	HP/UB/SL	2 - 4	286 - 572
F1	18	DDF	PS	HP/UB/SL	3 - 7	54 - 126
F2	33	DDF	H	HP/UB/SL	3 - 7	99 - 231
F3	1	DDF	H	HP/UB/SL	3 - 7	3 - 7
F4	89	P/DDF	CR/PS	HP/UB/SL	3 - 5	267 - 445
F5	2	DDF	CR	HP/UB/SL	2 - 4	4 - 8
F6	8	DDF/DFR	PS	HP/UB/SL	3 - 7	24 - 56
F7	4	DFR	PS	HP/UB/SL	3 - 7	12 - 28
F8	15	DDF	PS/H	HP/UB/SL	3 - 6	45 - 90
F9	43	DDF	H	HP/UB/SL	3 - 7	129 - 301
F10	26	DDF	PS	HP/UB/SL	3 - 6	78 - 156
F11	23	DDF/DFR	H	HP/UB/SL	3 - 7	49 - 161
F13	42	P	PS/H	HP/UB/SL	2 - 5	84 - 210
F14	14	DDF	H	HP/UB/SL	2 - 5	28 - 70
F15	11	DFR	H	HP/UB/SL	3 - 6	33 - 66
F16	37	DDF	CR/PS/H	HP/UB/SL	3 - 5	111 - 185
F17	17	DDF	CR/PS	HP/UB/SL	3 - 6	51 - 102
F18	4	DDF	CR	HP/UB/SL	2 - 4	8 - 16

UNIT	UNIT ACRES	SILVIC. METHOD 1/	YARDING SYSTEM 2/	FUELS MGT 3/	VOLUME CUT/ACRE (range)(MBF)	VOLUME CUT/UNIT (range)(MBF)
SUM	1,856					3393 - 8477

FOOTNOTES: 1/ Silvicultural Prescriptions (designates dominate prescription)
MDF=Moist Douglas- fir DDF=Dry Douglas-fir DFR=Douglas-fir Regen. P=Pine
WC =Wildlife Conductivity SmCT=8" pole commercial thin
2/Yarding Systems CR=Crawler PS=Cable H=Helicopter
3/Fuels Management HP=Handpile, cover and burn UB=Underburn Sl=Slashing

FERRIS BUGMAN
TABLE I
No New Road - Alternative 3 - Commercial thinning areas

UNIT	UNIT ACRES	SILVI. METHOD 1/	YARDING SYSTEM 2/	FUELS MGT 3/	VOLUME CUT/ACRE (range)(MBF)	VOLUME CUT/UNIT (range)(MBF)
B1	44	MDF	H	HP/UB/SL	2 - 4	88 - 176
B2	4	DDF	H	HP/UB/SL	2 - 4	8 - 16
B3	8	DDF	H	HP/UB/SL	2 - 4	16 - 32
B4	32	MDF	H	HP/UB/SL	2 - 4	64 - 128
B5	11	DDF	H	HP/UB/SL	2 - 4	22 - 44
B6	90	WC	PS/H	HP/UB/SL	1 - 3	90 - 270
B7	5	DDF	H	HP/UB/SL	2 - 4	10 - 20
B8	41	DDF	H	HP/UB/SL	2 - 4	82 - 164
B9	18	DDF	H	HP/UB/SL	2 - 4	36 - 72
B10A	31	DDF/MDF	H	HP/UB/SL	2 - 4	62 - 124
B10B	2	DDF	H	HP/UB/SL	2 - 4	4- 8
B11	14	SmCT	H	HP/UB/SL	1 - 3	14 - 42
B12	31	P/DFR	H	HP/UB/SL	2 - 4	62 - 124
B13	22	P	CR/PS	HP/UB/SL	2 - 4	44 - 88
B14	41	DDF	PS/H	HP/UB/SL	2 - 5	82- 205
B15	112	DDF/DFR	PS/H	HP/UB/SL	2 - 5	224 - 560
B16	25	DDF/P	H	HP/UB/SL	2 - 4	50 - 100
S3a	89	P/WC	H	HP/UB/SL	1 - 5	89 - 445

UNIT	UNIT ACRES	SILVI. METHOD 1/	YARDING SYSTEM 2/	FUELS MGT 3/	VOLUME CUT/ACRE (range)(MBF)	VOLUME CUT/UNIT (range)(MBF)
S3b	4	WC	H	HP/UB/SL	1 - 3	4 - 12
S3c	6	WC	H	HP/UB/SL	1 - 3	6 - 18
S4	3	WC	H	HP/UB/SL	1 - 3	3 - 9
S8a	6	P	H	HP/UB/SL	2 - 4	12 - 24
S8b	130	DDF/SmCT/ P	H	HP/UB/SL	2 - 4	260 - 520
S8h	28	P/DDF	H	HP/UB/SL	1 - 4	28 - 112
S9	1	P	H	HP/UB/SL	2 - 4	2 - 4
S16	42	DDF/DFR	H	HP/UB/SL	2 - 4	84 - 168
S18	8	P	H	HP/UB/SL	1 - 3	8 - 24
S19	22	DDF	H	HP/UB/SL	2 - 4	44 - 88
F1	18	DDF	PS	HP/UB/SL	3 - 7	54 - 126
F2	33	DDF	H	HP/UB/SL	3 - 7	99 - 231
F3	1	DDF	H	HP/UB/SL	3 - 7	3 - 7
F4	89	P/DDF	CR/PS	HP/UB/SL	3 - 5	267 - 445
F5	2	DDF	CR	HP/UB/SL	2 - 4	4 - 8
F6	8	DDF/DFR	PS	HP/UB/SL	3 - 7	24 - 56
F7	4	DFR	PS	HP/UB/SL	3 - 7	12 - 28
F8	15	DDF	PS/H	HP/UB/SL	3 - 6	45 - 90
F9	43	DDF	H	HP/UB/SL	3 - 7	129 - 301
F10	26	DDF	H	HP/UB/SL	3 - 6	78 - 156
F11	23	DDF/DFR	H	HP/UB/SL	3 - 7	49 - 161
F13	42	P	H	HP/UB/SL	2 - 5	84 - 210
F17	17	DDF	CR/PS	HP/UB/SL	3 - 6	51 - 102
F18	4	DDF	CR	HP/UB/SL	2 - 4	8 - 16
SUM	1,195					2405 - 5534

FOOTNOTES: 1/ Silvicultural Prescriptions (designates dominate prescription)

MDF=Moist Douglas- fir DDF=Dry Douglas-fir DFR=Douglas-fir Regen. P=Pine
WC =Wildlife Conductivity SmCT=8" pole commercial thin
2/Yarding Systems CR=Crawler PS=Cable H=Helicopter
3/Fuels Management HP=Handpile, cover and burn UB=Underburn Sl=Slashing

Proposed Action - Pre-commercial Thinning areas

OI Unit	Acres	OI Unit	Acres	OI Unit	Acres
127282	12.5	127284	2.8	156601	10.0
156614	738	156647	2.8	157344	3.1
157369	6.3	157370	2.1	157374	24.5
157436	13.4	157441	4.3	157445	22.9
157450	15.8	157452	19.0	157453	5.7
157463	13.3	157833	15.2	157842	42.7
157850	32.4	157851	3.0	157858	5.7
157868	9.4	157986	24.4	158012	15.4
158322	5.4	158426	13.0	158430	14.2
158448	13.7				

Ferris Bugman Non-Commercial Units Proposed Action Alternative 2		
Unit number	**Acres**	**Proposed Initial Fuels Treatment**
N1	102	Manual treatment with Broadcast burn
N2	78	Manual treatment with Broadcast burn
N3	112	Broadcast burn
N4	325	Broadcast burn
N5	107	Manual treatment with Broadcast burn
N8	293	Broadcast burn
N9	151	Broadcast burn
N12	143	Manual treatment with broadcast burn
N13	28	Underburn
N14	36	Underburn
N15	10	Underburn

Ferris Bugman Non-Commercial Units Proposed Action Alternative 2		
N16	11	Underburn
N17	141	Manual treatment
Total	1537	

Ferris Bugman Non-Commercial Units Alternative 3 No Road Alternative		
Unit number	**Acres**	**Proposed Initial Fuels Treatment**
N5	107	Manual treatment with Broadcast burn
N8	293	Broadcast burn
N9	151	Broadcast burn
N12	143	Manual treatment with broadcast burn
N13	28	Underburn
N14	36	Underburn
N15	10	Underburn
N16	11	Underburn
N17	141	Manual treatment
Total	920	

Table B-1: Proposed improvements on existing roads in the Ferris Bugman project area.

Road Number	Approximate Length (miles)	Existing Surface: Depth (inches) and Type[1]	Control[2]	Possible Improvements: Depth (inches) and Type[1]	Seasonal Restriction[3] (for log hauling)
37-4-22	0.1	6" ASC	BL	4" ASC	2
37-4-22	0.8	6" ASC	NE	4" ASC	2
37-4-22	0.7	6" ASC	BL	4" ASC	2
37-4-22	0.2	8" ABC	PB	2" ASC	2
37-4-	1.8	8" ABC	BL	2" ASC	2
37-4-	0.8	6" ASC	BL	4" ASC	2
37-4-	0.1	NAT	BL	8" ABC	1

Road Number	Approximate Length (miles)	Existing Surface: Depth (inches) and Type[1]	Control[2]	Possible Improvements: Depth (inches) and Type[1]	Seasonal Restriction[3] (for log hauling)
38-3-5	0.8	12" ASC	BL	-	2
"	0.3	12" ASC	BL	-	2
"	2.0	10" ASC	BL	-	2
"	0.9	7" ABC	BL	-	1
38-3-	0.2	12" ASC	BL	-	2
38-3-	1.3	6" ASC	BL	4" ASC	2
38-3-6	2.8	4" ASC	BL	-	1
38-3-	2.5	NAT	BL	8" ASC/Gate	1
38-3-8	0.4	6" ASC	BL	4" ASC	2
38-4-17	1.6	10" BST	BL	-	2
"	2.5	8" ASC	BL	-	1
38-4-20	1.0	8" GRR	BL	-	1
38-4-29	2.6	6" GRR	BL	4" ASC	2
38-4-31	1.6	NAT	BL	8" ABC/Gate	1
"	0.5	NAT	PV	8" ABC	1
Total	25.5				

1 - = no improvements; NAT = natural; ASC = aggregate surface course; ABC = aggregate base course; BST bitumin surface treatment; PRR = pit run rock; GRR = grid rolled.
2 BL = Bureau of Land Management; PV = private;
3 0 = no restrictions; 1 = hauling restricted between 10/15 and 5/15; 2 = hauling restricted between 11/15 and 4/15.
* Portion to be amended in M-2000 Right-of-Way Agreement with Indian Hills and M-660 with Boise Cascade Corp.

Table B-2: Proposed new road construction in the Ferris Bugman project area.

Road Number	Approximate Length (miles)	Existing Surface: Depth (inches) and Type[1]	Control[2]	Possible Improvements: Depth (inches) and Type[1]	Seasonal Restriction[3] (for log hauling)
37-4-22.0*	5.2	-	BL	6" - 8" ABC	1
37-4-27.4	1.1	-	BL	8" ABC	1
38-4-31.0	0.8	-	BL	8" ABC	1

Road Number	Approximate Length (miles)	Existing Surface: Depth (inches) and Type[1]	Control[2]	Possible Improvements: Depth (inches) and Type[1]	Seasonal Restriction[3] (for log hauling)
Total Mileage:	7.1				

1 - = no improvements; NAT = natural; ASC = aggregate surface course; ABC = aggregate base course; BST bitumin surface treatment; PRR = pit run rock; GRR = grid rolled.
2 BL = Bureau of Land Management; PV = private.
3 0 = no restrictions; 1 = hauling restricted between 10/15 and 5/15; 2 = hauling restricted between 11/15 and 4/15.
* Portion to be amended in M-2000 Right-of-Way Agreement with Indian Hills and the M-660 Agreement with Boise Cascade Corp..

Table B-3: Proposed road decommissioning[a] in the Ferris Bugman project area.

Road Number	Approximate Length (miles)	Existing Surface: Depth (inches) and Type[1]	Control[2]	Possible Improvements: Depth (inches) and Type[3]	Seasonal Restriction[4] (for log hauling)
38-4-1	0.3	NAT	BL	Natural Decom.	1
T38, R4W Sec. 4 & 9	1.5	NAT	BL/ BCC	Mechanical Decom.	1
T38, R4W Sec. 10, 11, 14, & 15	2.2	NAT	BL	Natural Decom	1
T38S,R4W Sec. 13	0.6	NAT	BL	Natural Decom	1
38-4-17	0.2	NAT	BL	Mechanical Decom.	1
38-4-20.1	0.8	NAT	BL	Mechanical Decom.	1
A Spur	0.1	NAT	BL	Mechanical Decom.	1
T38S,R4W Sec. 19&20	0.1	NAT	BL	Mechanical Decom.	1
T38S,R4W Sec. 30	0.7	NAT	BL	Mechanical Decom.	1
T38S,R4W Sec. 31	0.3	NAT	BL	Mechanical Decom.	1
38-4-19.0	0.5	NAT	BL	Mech/Nat Decom.	1
38-4-31.0	0.2	NAT	BL	Mechanical Decom.	1

Road Number	Approximate Length (miles)	Existing Surface: Depth (inches) and Type[1]	Control[2]	Possible Improvements: Depth (inches) and Type[3]	Seasonal Restriction[4] (for log hauling)
Total Mileage:	7.5				

- NAT = natural.
- Natural Decommission - Sections of these roads would be allowed to decommission naturally but may include some selective ripping, removal of drainage structures, construction of water bars and barricades.
  Mechanical Decommission - This usually includes ripping, removing drainage structures, seeding and/or planting, mulching, constructing water bars and barricades.

3) BL = Bureau of Land Management; PV = private; BCC = Boise Cascade Corporation

4) 0 = no restrictions; 1 = hauling restricted between 10/15 and 5/15; 2 = hauling restricted between 11/15 and 4/15.

APPENDIX B - BOTANY - SPECIAL STATUS PLANT LIST

Bureau Sensitive species and their habitats would be managed, protected, or conserved such that the proposed action would not contribute to the need to list these species. The Bureau of Land Management's policy is to, a) Conserve Threatened and Endangered species and the ecosystems on which they depend, and b) To ensure that actions authorized on BLM administered lands do not contribute to the need to list any other Special Status Species under the provisions of the ESA (BLM Manual 6840.02).

Scientific Name	Common Name	Code[5]	Status[2]
Agrostis hendersonii	Henderson's bentgrass	AGMIH	BSO
Androsace elongata ssp. acuta	Long-stemmed androsace	ANELA	BAO
Arabis modest	Rogue Canyon rockcress[3]	ARMO	BAO
Arabis macdonaldiana	Del Norte rockcress[3]	ARMA	FE
Arctostaphylos hispidula	Hairy manzanita[3]	ARHI5	BAO
Asplenium septentrionale	Northern spleenwort	ASSE	BAO
Astragalus californicus	California milk-vetch[3]	ASCA7	BAO
Bensoniella oregana	Bensonia[3]	BEOR	BSO
Botrychium crenulatum	Crenulate moonwort	BOCR	BSO
Calochortus coxii	Cox's mariposa lily	CACO41	BSO
Calochortus greenei	Greene's mariposa lily[3]	CAGR	BSO
Calochortus howellii	Howell's mariposa lily[3]	CAHO11	BSO
Calochortus indecorus	Sexton Mt. mariposa lily	CAIN18	BSO
Calochortus monophyllus	Yellow star-tulip[3]	CAMO3	BAO
Calochortus *persistent*	Siskiyou mariposa	CAPE	BAO
Calochortus nitidis	Broad leaf maiposa lily[3]	CANI	BSO
Calochortus umpquaensis	Umpqua mariposa lily[3]	CAUM5	FC/SE
Camassia howellii	Howell's camas[3]	CAHO12	BSO
Camissonia graciliflora	Evening-primrose[3]	CAGR14	BAO
Camissonia ovata	Golden eggs	CAOV4	BAO
Carex comosa	Bristly sedge	CACO8	BAO
Carex crawfordii	Crawford's sedge	CACR4	BAO
Carex gigas	Siskiyou sedge[3]	CAGI5	BAO
Carex interior	Inland sedge	CAIN11	BAO
Carex livida	Pale sedge[3]	CALI	BAO
Carex serratodens	Saw-toothed sedge[3]	CASE2	BAO
Cheilanthes intertexta	Coastal lipfern[3]	CHIN	BAO
Chlorogalum angustifolium	Narrow-leaved amole	CHAN2	BAO
Cimicifuga elata	Tall bugbane[3]	CIEL	BSO/SC
Clarkia heterandra	Small-fruit clarkia[3]	CLHE4	BAO
Cryptantha milobakeri	Milo Baker's cryptantha[3]	CRMI4	BAO
Cupressus bakeri	Baker's cypress[3]	CUBA	BAO
Cypripedium fasciculatum	Clustered lady's-slipper[3]	CYFA	BSO/SC
Delphinium nudicaule	Red larkspur[3]	DENU	BAO
Dicentra pauciflora	Few-flowered bleedingheart	DIPA	BAO
Draba howellii	Howell's whitlow-grass	DRHO	BAO
Epilobium oreganum	Oregon wouldow herb[3]	EPOR	BSO
Erigeron cervinus	Deer erigeron	ERCE	BAO
Eriogonum lobbii	Lobb's buckwheat	ERLO2	BAO
Erythronium howellii	Howell's adder's-tongue[3]	ERHO10	BSO

Scientific Name	Common Name	Code[5]	Status[2]
Eschscholzia caespitosa	Gold poppy[3]	ESCA	BAO
Festuca elmeri	Elmer's fescue[3]	FEEL2	BAO
Frasera umpquaensis	Umpqua swertia[3]	FRUM	BSO
Fritillaria gentneri	Gentner's fritillary[3]	FRGE	FE
Fritillaria glauca	Siskiyou fritillary[3]	FRGL	BAO
Fritillaria cf. purdyi	Purdy's fritillary	FRPU3	BAO
Gentiana plurisetosa	Elegant gentian	GEPL6	BSO
Gentiana setigera	Waldo gentian[3]	GESE2	BSO
Hazardia whitneyi spp. discoideu	Whitney's haplopappus	HAWHD2	BAO
Hastingsia atropurpurea	Purple-flowered rush lily[3]	HAAT	BSO
Hastingsia bracteosa	Large-flowered rush lily[3]	HABR5	BSO/ST
Horkelia tridentata ssp. tridentata	Three-toothed horkelia	HOTRT	BAO
Howellia aquatilis	Howellia	HOAQ	FT
Iliamna bakeri	Baker's globe mallow[3]	ILBA	BAO
Iliamna latibracteata	Globe mallow[3]	ILLA2	BAO
Isopyrum stipitatum	Dwarf isopyrum[3]	ISST2	BAO
Keckiella lemmonii	Bush beardtongue	KELE	BAO
Lathyrus lanszwertii var. tracyi	Tracy's peavine[3]	LALAT	BAO
Lewisia cotyledon var. howellii	Howell's lewisia[3]	LECOH2	BSO
Lewisia leana	Many-flowered lewisia[3]	LELE8	BAO
Limnanthes floccosa ssp. bellingeriana	Bellinger's meadow-foam[3]	LIFLB	BSO
Limnanthes floccosa ssp. pumila	Dwarf meadow-foam[3]	LIFLP2	FC
Limnanthes gracilis var. gracilis	Slender meadow-foam[3]	LIGRG2	BSO
Lomatium cookii	Cook's parsley[3]	LOCO8	FC/SE
Lomatium engelmannii	Engelmann's desert-parsley	LOEN	BAO
Lomatium tracyi (2-EX)	Tracy's desert-parsley	LOTR	BAO
Lotus stipularis var. stipularis	Stipuled trefoil	LOSTS	BAO
Lupinus tracyi	Tracy's lupine	LUTR	BAO
Lycopodiella inundata	Bog club-moss	LYIN2	BAO
Meconella oregana	White meconella[3]	MEOR	BSO
Microseris douglasii ssp. douglasii	Douglas' microseris	MIDOD	BAO
Microseris howellii	Howell's microseris[3]	MIHO2	BSO
Microseris laciniata ssp. detlingi	Detling's microseris[3]	MILAD	BSO
Mimulus bolanderi	Bolander's monkey-flower[3]	MIBO3	BAO
Mimulus jepsonii	Jepson's monkey-flower[3]	MIJE	BAO
Monardella purpurea	Siskiyou monardella[3]	MOPU2	BAO
Montia howellii	Howell's montia	MOHO	BSO
Myosorus sessilis	Least mouse tail	MYMIS	BSO
Navarretia heterandra	Tehama navarretia	NAHE	BAO
Nemacladus capillaris	Common nemacladus[3]	NECA	BAO
Pogogyne floribunda	Profuse flowered pogogyne	POFL17	BAO
Pellaea andromedifolia	Coffee fern[3]	PEAN2	BAO
Pellaea mucronata var. mucronata	Bird's-foot fern[3]	PEMUM	BAO
Perideridia erythrorhiza	Red-root yampah[3]	PEER3	BSO
Pilularia americana	American pillwort	PIAM	BAO
Plagiobothrys figuratus ssp. corallicarpus	Coral-seeded allocarya[3]	PLFIC	BSO
Plagiobothrys glyptocarpus	Sculptured allocarya	PLGL2	BAO

Scientific Name	Common Name	Code[5]	Status[2]	
Plagiobothrys greenei	Greene's allocarya[3]	PLGR	BAO	
Plagiobothrys lamprocarpus	Shiny-fruited allocarya	PLLA3	BAO	
Ranunculus austro-oreganus	Southern Oregon buttercup[3]	RAAU	BSO	
Rhamnus ilicifolia	Red-berried buckthorn	RHIL	BAO	
Romanzoffia thompsonii	Thompson's romanzoffia	ROTH50	BSO	
Salix delnortensis	Del Norte wouldow[3]	SADE2	BAO	
Saxifragopsis fragarioides	Joint-leaved saxifrage	SAFR5	BAO	
Scirpus pendulus	Drooping bulrush[3]	SCPE4	BSO	
Sedum laxum ssp. heckneri	Heckner's stonecrop[3]	SELAH	BAO	
Sedum moranii	Rogue River stonecrop[3]	SEMO5	BSO	
Sedum oblanceolatum	Applegate stonecrop[3]	SEOB3	BSO	
Sedum spathufloium ssp. purdyi	Purdy's stonecrop[3]	SESPP2	BAO	
Senecio hesperius	Siskiyou butterweed[3]	SEHE2	BSO	
Silene hookeri ssp. bolanderi	Bolander's catchfly	SIHOB	BAO	
Sophora leachiana	Western sophora[3]	SOLE3	BSO	
Streptanthus howellii	Howell's streptanthus[3]	STHO	BSO	
Trillium angustipetalum	Siskiyou trillium	TRAN5	BAO	
Triteleia ixioides ssp. anilina	Sierra brodiaea[3]	TRIXA	BAO	
Utricularia minor	Lesser bladderwort	UTMI	BAO	
Viola primulifolia ssp. occidentalis	Western bog violet[3]	VIPRO2	BSO	
Wolffia columbiana	Columbia wolffia	WOCO	BAO	
	TRACKING SPECIES			
Adiantum jordanii	California maiden-hair[3]	ADJO	BTO	
Allium peninsulare (2-EX)	Peninsular onion	ALPE	BTO	
Allium sanbornii var. sanbornii	Sanborn's onion	ALSAS	BTO	
Ammannia robusta	Ammannia	AMRO3	BTO	
Asarum caudatum var. novum	White-flowered ginger[3]	ASCA50	BTO	
Aster brickellioides	Smooth rayless aster[3]	ASBR4	BTO	
Astragalus gambelianus	Gambel milk-vetch	ASGA	BTO	
Brodiaea californica	California brodiaea	BRCA4	BTO	
Callitriche marginata	Winged water-starwort[3]	CAMA3	BTO	
Cardamine nuttallii var. covilleana	Coville's toothwort	CANUC	BTO	
Cardamine nuttallii var. dissecta	Dissected toothwort	CANUD	BTO	
Carex barbarae	Santa Barbara sedge	CABA4	BTO	
Carex gynodynama	hairy sedge	CAGY3	BTO	
Carex integra	Smooth-beak sedge	CAIN10	BTO	
Carex luzulifolia	Luzula-leaved sedge	CALU6	BTO	
Carex nervina	Sierra nerved sedge	CANE5	BTO	
Carex serpenticola	Serpentine sedge	CASE50	BTO	
Cirsium ciliolatum	Ashland thistle[3]	CICI	BTO	
Cypripedium montanum	Mountain lady's-slipper[3]	CYMO2	BTO	
Gilia sinistra ssp. sinistra	Sinister gilia	GISIS	BTO	
Hackelia bella	Beautiful stickseed[3]	HABE	BTO	
Helianthus bolanderi	Bolander's sunflower	HEBO2	BTO	
Hieracium greenei	Greene's hawksweed[3]	HIGR2	BTO	
Hierochloe odorata	Sweetgrass	HIOD	BTO	

Scientific Name	Common Name	Code[5]	Status[2]	
Juncus kelloggii	Kellogg's dwarf rush	JUKE	BTO	
Leucothoe davisii	Sierra laurel	LEDA	BTO	
Linanthus bakeri	Baker's linanthus	LIBO2	BTO	
Lipocarpha aristulata	Aristulate lipocarpha	LIAR6	BTO	
Lithophragma heterophyllum	Hill star (Siskiyou Mtns only)[3]	LIHE	BTO	
Luzula subcongesta	Donner wood-rush	LUSU7	BTO	
Mertensia bella	Oregon bluebells	MEBE	BTO	
Mirabilis greenei	Siskiyou four-o'clock	MIGR6	BTO	
Monardella glauca	Pale Monardella[3]	MOGL	BTO	
Navarretia tagetina	Marigold navarretia	NATA3	BTO	
Phacelia leonis	Leos phacelia	PHLE2	BTO	
Pinus sabiniana	Digger pine	PISA2	BTO	
Plagiobothrys austiniae	Austin's plagiobothrys	PLAU	BTO	
Poa rhizomata	Timber bluegrass	PORH	BTO	
Poa suksdorfii	Suksdorf's bluegrass	POSU10	BTO	
Ribes divaricatum var. pubiflorum	Straggly gooseberry	RIDIP2	BTO	
Ribes inerme var. klamathense	Klamath gooseberry[3]	RIINK	BTO	
Sidalcea hickmanii	chapparal checkerbloom[3]	SIHI	BTO	
Silene californica	California pink	SICA4	BTO	
Silene lemmonii	Lemmon's campion	SILE2	BTO	
Solanum parishii	Parish'snightshade[3]	SOPA	BTO	
Streptanthus glandulosus	Common jewel flower	STGLH	BTO	
Triteleia ixioides ssp. scabra	Golden triteleia	TRIXS		BTO
Zigadenus exaltatus	giant deathcamas[3]	ZIEX	BTO	
SURVEY & MANAGE SPECIES VASCULAR PLANTS				
Allotropa virgata	Candystick[3]	ALVI2	1,2	
Eucephalus vialis (Aster v.)	Wayside aster[3]	ASVI4	1,2	
Botrychium minganense	Mingan moonwort	BOMI	1,2	
Botrychium montanum	Western goblin	BOMO	1,2	
Bensoniella oregana	Bensonia[3]	BEOR	1,2	
Cypripedium fasciculatum	Clustered lady's-slipper[3]	CYFA	1,2	
Cypripedium montanum	Mountain lady's-slipper[3]	CYMO2	1,2	
Pedicularis howellii	Howell's lousewort	PEHO	1,2,PB	

SURVEY & MANAGE SPECIES NON-VASCULARS (see NWFP, and supplemental ROD)

[1] As of February, 1995.

[2] Federally listed by U.S. Fish and Wildlife Service and the National Marine Fisheries Service:
FE: Federal endangered FT: Federal threatened FP: Federal proposed T(hreatened) or E(ndangered)
FC: Federal candidate T(hreatened) or E(ndangered)
State Listed: SE: State endangered ST:State threatened SC: State candidate
Bureau Sensitive: BSO: Bureau Sensitive in Oregon; ONHP List 1; Oregon Candidate
BAO: Bureau Assessment in Oregon; ONHP List 2
BTO: Bureau Tracking Species, ONHP lists 3 & 4 BWO: Bureau Watch Species, ONHP list 4

[3] Known to exist on BLM-administered land in the planning area.

[4] Supplemental Environmental Impact Statement

[5] Plant Symbol - USDA Soil Conservation Service, March, 1994.
[6] 2-EX: May be extinct

February 11, 2000

APPENDIX F
FUELS MANAGEMENT

A. GOALS

1) Improve firefighter and public safety wildfire conditions throughout the landscape.
2) Develop and enhance fire suppression strategic and tactical opportunities.
3) Restore vegetation conditions to within the range of historic variability considering natural disturbance regimes.
4) Enhance and restore native fire resistant plant species.
5) Maintain and enhance air quality (long-term).

B. OBJECTIVES

1. In density management, precommercial timberland, woodland, and shrubland treatments: reduce the likelihood of crown fire initiation and sustainability in forest, woodland, and shrubland stands through thinning and pruning treatments which reduce horizontal and vertical continuity of stand canopies.
2. In density management precommercial timberland, woodland, shrubland treatments: strategically locate areas for reduction of surface fuel loadings and continuity through use of fuels reduction treatments including under burning, piling and burning, mechanical mastication, whole tree yarding, lopping and scattering, and firewood or chip utilization.
3. In grasslands, roadsides, other areas as needed: utilize prescribed fire to maintain and improve grasslands, control noxious weeds, and enhance native species where appropriate.
4. At existing and new logging facilities, other areas as needed: develop and maintain additional fire facilities throughout the landscape including helispots, access roads, gates, pump chances and safety zones.
5. For all burning operations: perform burning operations during periods of good ventilation and transport to minimize impacts of smoke to the public.

Fire is recognized as a key natural disturbance process throughout Southwest Oregon (Atzet and Wheeler 1982). Climate and topography combine to create the fire regime found within an area. Fire regime refers the frequency, severity and extent of fires occurring in an area (Agee 1991). Two broad fire regimes (low and moderate severity) were identified for the project area using vegetation types as a basis for fire regime delineation. These regimes are based on the effects from fire on the dominant vegetation.

A low-severity regime is characterized by nearly continual summer drought; fires are frequent (1-25 years), burn with low intensity, and are widespread. Under a moderate severity regime fires burn with different degrees of intensity. Stand replacement fires as well as low intensity fires can occur depending on burning conditions. The overall effect of fire on the landscape in this regime is a mosaic burn.

In the early 1900s, uncontrolled fires were considered to be detrimental to forests. Suppression of all fires became a major goal of land management agencies. Based on calculations using fire return intervals, five fire cycles have been eliminated in the southwest Oregon mixed conifer forests that occur at low elevations (Thomas and Agee 1986). Species, such as ponderosa pine and oaks, have decreased. Many stands, which were once open, are now heavily stocked with conifers and small oaks which has changed the horizontal and vertical stand structure. Surface fuels and laddering effect of fuels have increased, which has increased the threat of crown fires which were once historically rare. The absence of fire has had negative effects on grasslands, shrublands, and woodlands. Research in the last few

decades has shown that many southern Oregon shrub and herbaceous plant species are either directly or indirectly fire-dependent.

The thinning proposed under this project would reduce the aerial component of fuels that is currently present. The fuels reduction work (prescribed fire), which is proposed for the majority of the stands would reduce ladder and surface fuels. This type of work is proposed in order to reduce the current fuel hazard which exist and to mitigate the increased fuel loadings created by thinning operations. Fuels reduction work also is proposed in grasslands and shrub lands in order to reduce fuel loadings as well as maintain species such as native grasses, oaks and pines.

An array of treatments to reduce fuels are proposed for the project area. The type of treatment utilized is dependent on existing and projected fuel loadings, existing vegetative conditions, slope, and access. Treatments include manual treatment, prescribed burning or a combination of these treatments.

Manual treatment includes hand cutting existing ladder or brush and then hand piling this material so it can be burned. This type of treatment would be utilized in thinned stands.

Prescribed burning includes, under burning, broadcast and handpile burning. Handpile burning would be used in the majority of areas which have been manually treated. High fuel loadings in some areas make under burning not desirable due to the high probability of mortality to the residual stand.

Under burning is the preferred method of fuels reduction work in thinned stands. Under burning is highly effective because it reduces a large amount of surface and ladder fuels. This type of burning usually would occur in late summer, fall and spring.

Broadcast burning would be used in the treatment of grasslands and shrub lands. This type of burning would usually would occur in the late summer, fall or early winter. Broadcast burning can be accomplished with the use of a helicopter which greatly increases safety to personnel conducting these operations because they are not exposed to the interior portions of the unit.

Future maintenance of all areas in which fuels reduction work occurs within this project area would be needed in order to maintain low fuel loadings and species dependent on fire. Under burning is the preferred method for maintaining these areas. Limited access to these areas would determine if under burning can be used. The risk of escape is a major factor when conducting this type of burning operation. Without access there is an increase risk of escape due to the lack of availability and mobility of people, equipment and water. If access is determined to be a problem, future treatments would have to be done manually.

SHRUB/WOODLAND RESTORATION

A 'Desired Future Condition' in grasslands, shrublands and woodlands

Unlike conifer communities, grasslands, shrublands, and most woodland plant communities are characterized by large changes in species abundance over short periods of time. This is because many plant species have short lifespans, and are dependent on fire for reproduction.

Various herbaceous species thrive for only a few years before conditions change enough to prevent growth. Shrub species may grow decadent after a few decades, and need to be renewed through activation of their seedbank by fire. Furthermore, many hardwood species are dependent on fire for creating conditions favoring their persistence on the

landscape. This condition is best described in terms of fuel-loading. Presently, fire suppression has lead to high fuel conditions conducive to intense fires with the ability to kill above-ground parts, as well as latent, below-ground epicormic buds.

A generalized 'desired future condition' incorporates a reduction of fuel-loading over the landscape, while also recreating a range of conditions (relating to plant life-form composition and fuels) across the landscape. Shrub/woodland management in the Appleseed project area therefore subscribes to a number of ecological, economic, and social issues pertinent to the management unit, as well as the landscape scales. Altogether, the prevailing issues have led to the definition of the following management objectives:

Management objectives for grassland/shrubland/woodland

- Reduce landscape fire-hazard.
- Create fire-safe areas for fire-fighters.
- Maintain/increase richness of native plant species.
- Maintain richness of non-vascular plants and wildlife.
- Restore shrubland/woodland life-form composition.
- Manage to reduce the abundance of non-native weeds.
- Restore ecosystem functioning (reintroduce fire).
- Restore landscape diversity of conditions (diversity of plant and wildlife habitat measured as plant species composition and plant structure).
- Maintain an aesthetically pleasing landscape.
- Create innovative prescriptions that minimize treatment costs.
- Create a spatial/temporal management plan for moving grasslands, shrublands, and hardwoods towards a desired future condition for the landscape.
- Strategic planning and innovative prescription building incorporating commonly observed ecological relations would help achieve the above objectives across the Ferris Bugman landscape.

Important ecological relationships considered in planning/prescription building

1. Unique plant community compositions and structures form an important part of the compositional and structural diversity of a landscape. Every effort must be made to maintain these specialized/unique plant communities.
2. Patches of Oregon white oak frequently identify corresponding patches of native plants. While the exact mechanism of this relationship unknown (it may implicate mycorrhizae, shading, and hydraulic lift), preserving Oregon white oak would also serve to maintain patches of native plants.

3. Most hardwood species appear to suppress shrubs. Since hardwoods are generally less flammable than conifers and wedgeleaf *Ceanothus*, maintaining hardwoods may decrease the cost of future vegetation manipulations.

4. There are many examples of individual plants, lichens, mosses, fungi , and wildlife species being dependent on a very particular condition of a plant community (i.e. an are of dense shrub within a grassland/shrubland association). Maintaining a range of conditions within all vegetation classes would ensure the persistence of fauna and flora across the landscape.

5. Since dispersion, initial establishment, and growth till sexual maturity is critical to all organisms (plant and wildlife), maintaining an interspersion of all condition classes within plant communities is critical. Such interspersion would maintain a proximal sources of propagules for plant and wildlife no matter what their preferred habitat(s).

6. Shrubs frequently oust herbaceous plants from a plant community through competition for resources (nutrients, water, shade). Since many herbaceous species are short-lived in the seedbank, restorative measures may include seeding with native plants, to reduce erosion and ensure the establishment of native plants following treatment.

7. Initial plant community surveys indicate considerable spatial correlation within continuous management units. Given the uncertainty of the effects of our prescriptions, a full range of treated and untreated areas should be maintained within larger topographical areas.

8. The undesired characteristics of high shrub canopy require a maintenance schedule preventing long-term dominance by shrubs, and a prevention of fuels detrimental to the persistence of hardwoods.

9. Since little information exists on pre-historical conditions in shrublands and oak woodlands, inference from life-history characteristics should be used to validate management decisions.

10. Individual prescriptions cannot meet all management objectives. In management units with conflicting management objectives, compromise needs to be achieved by the spatial arrangement of the full range of prescriptions across the landscape.

Careful prescription design allows land managers to work with ecological cycles and relationships observable within individual management units. Across the entire Appleseed planning area (the "big picture"), careful consideration was given to oak woodland, brushland, and grassland prescriptions. Of the areas selected for treatment, the following general types of prescriptions were recommended for suitable target plant communities:

1. Conventional thinning based on species, spacing, and dbh (diameter-at-breast-height, a measure of trunk or stem diameter of a shrub or tree).
2. Thinning based on life-form (hardwoods not thinned) combined with different levels of shrub removal.
3. Species-independent canopy opening within presently closed-canopy, hardwood-dominated systems.
4. Prescribed fire.

Baseline information on the extent and composition of dryland plant communities was collected to allow the planning of activities subscribing to the defined management objectives. Monitoring using transects would allow the validation of many of the above ecological relations assumed in the planning process, and design of work prescriptions.

NOXIOUS WEEDS

Noxious weeds as defined by the Oregon State Weed Board are "[Those plants] which are injurious to public health, agriculture, recreation, wildlife, or any public or private property." They have been declared a menace to public welfare *(ORS 570.505)* (Oregon Department of Agriculture 1995).

Noxious weeds are unintentionally introduced by several modes. Historically, some may have escaped garden or field cultivation, been brought in on transportation conveyances, in livestock feed, or carried by imported animals. Modern sources include these traditional conveyances, but also common sources of weed transport, such as road and power line construction. Any activity that creates disturbed soil and forms a corridor into an area can act as a weed pathway. Once established, many of these species possess the ability to out compete the

native vegetation even in the absence of a disturbance.

Federal land managers cooperate with Oregon Department of Agriculture's efforts to control and identify target species by tracking distribution of target species on Federal lands. Noxious weed populations must be located quickly to increase the effectiveness of control efforts. The Oregon Department of Agriculture is focusing research on identifying biological control agents. Biological control agents are successful at controlling some species, such as Klamath Weed. This control method appears promising for several other species, however, it is still too early to draw any definitive conclusions.

RIPARIAN RESERVES: METHODOLOGY OF DETERMINING TREATMENT

Do not treat riparian reserves which:

- have more than 20 pieces of large downed wood /mile, larger than 15 inches in diameter and 15 feet in length;
- have riparian vegetation and a stream channel in proper functioning condition;
- have known fish presence of any species;
- have a high potential for slumping either adjacent to or inside stream channel;
- are not adjacent to upland areas planned for silvicultural treatments;
- are perennial streams;
- have stream channels with greater than 30% of the substrate in bedrock or sand, indicating scouring or decomposed granitic soil erosion, respectively;
- contain any special Riparian Reserve areas as determined by Riparian, fish habitat, and fish population surveys in the field since 1995.

AQUATIC CONSERVATION STRATEGY OBJECTIVES

Site Level: Explains the effects at a small spatial scale. This is equivalent to the activity area where a culvert is being replaced, or approximately an 800m-long stream reach.
HUC-7 Level: Explains the effects at a moderately large spatial scale– the extent of each HUC-7 drainage within the project area: Slagle Creek, Humbug Creek, and Ferris Gulch.
HUC-5 Level: Explains the effects at a large spatial scale– the extent of the Middle Applegate watershed.

1. Maintain and restore the distribution, diversity and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations and communities are uniquely adapted.

Site Level: Not applicable: spatial scale too small.

HUC-7 Level: At the project level, the primary treatment objective was to restore landscape-level processes (like fire). Although the response (of the vegetation for example) to the projects won't be immediate, over the long term silvicultural thinning, fire reintroduction and sediment source reduction would improve nutrient cycling, groundwater flow, riparian vegetation connectivity and many other spatially and/or temporally large features and processes.

HUC-5 Level: The Ferris Bugman Project will reduce the risk of severe, stand-replacing fires across the Middle Applegate watershed while simultaneously reintroducing fire into the landscape. This would help keep aquatic ecosystems intact until better connections between refugia areas can be reestablished.

2. Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact refugia. These network connections must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependant species.

Site Level: Over the long-term, floodplain connectivity would be restored through road decommissioning, and culvert replacements.

HUC-7 Level: Over the long-term, Riparian Reserve connectivity would be restored through road decommissioning, and culvert replacements.

HUC-5 Level: At the HUC-5 scale (which includes the Applegate River as well as Thompson, Humbug, Slagle, Chapman, and Keeler Creeks and Rock, Long and China Gulches) and the two largest tributaries, Thompson and Forest Creek), the activities in the Ferris Bugman project area would still not be sufficient to restore any of the connectivity indicators. This will take a concerted and coordinated effort of all landowners and managers in the Applegate Valley.

3. Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.

Site Level: Culverts will be replaced (when roads remain) or removed (when roads are decommissioned) in small intermittent streams throughout the project area. Appropriately-sized culverts will improve natural shoreline, bank and bottom configurations; removing culverts and associated fill will restore the streams's shape at that location. The addition of large woody material to intermittent streams near riparian reserve thinning sites may slightly improve bank conditions at those sites.

HUC-7 Level: No effect at this spatial scale.

HUC-5 Level: No effect at this spatial scale.

4. Maintain and restore water quality necessary to support healthy riparian, aquatic and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.

Site Level: Road improvements, culvert replacements, and decommissioning would reduce the current road-related sediment load in certain streams. New sediment control measures (above and beyond RMP BMP's) would ensure that no sediment is added to streams with restorative roadwork.

HUC-7 Level: Theoretically, reintroduction of fire and corresponding shifts in plant communities may improve upland and riparian nutrient cycling processes, or the amounts of different nutrients moving into groundwater, could ultimately benefit streams but no current monitoring program will be able to track this, so the benefits remain unknown. Water temperature will not be affected.

HUC-
5 Level: No effect at this spatial scale.

5. Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.

Site Level: See ACS Objective #4.

HUC-7 Level: Although the overall road miles are not decreasing by many, roads in riparian areas are being decommissioned, while new road construction is located on or very near ridgetops. Long term fire hazard reduction will also reduce the risk of a severe, stand-replacement fire. Such a fire could cause sharply increased peak flows and sediment levels and corresponding downcutting in streams throughout a large area.

HUC-
5 Level: No effect at this spatial scale.

6. Maintain and restore instream flows sufficient to create and sustain riparian, aquatic and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The

timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected.

Site Level: Road decommissioning and improvements would reduce the amount of road surface area and reduce concentrated flow off of roads, which would improve (reduce) winter peak flow levels. Upland silvicultural thinning may increase summer low flows, but within the range of normal variability (this is viewed as an improvement).

HUC-7 Level: Long term fire hazard reduction would also reduce the risk of a severe, stand-replacement fire. Such a fire could cause sharply increased peak flows and sediment levels and corresponding erosive downcutting in streams throughout a large area.

HUC-5 Level: No effect at this spatial scale.

7. Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.

Site Level: Wetland water table elevation may be slightly improved by upland thinning.

HUC-7 Level: The duration of floodplain inundation may be affected by attenuation of the peak flow. See ACS Objective #3 and #6.

HUC-5 Level: No effect at this spatial scale.

8**. Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability**.

Site Level: Riparian Reserve thinning would enable individual trees to attain late-successional characteristics sooner. In some treatment areas, tiny light gaps might allow the formation of an under- or middle-story, improve structural diversity at a particular site. However, riparian-dependant forbs, shrubs, and trees occupy a very narrow band along intermittent streams. Because these riparian areas fall within the "no treatment zone," there will probably be no improvements to riparian-dependant plant communities.

HUC-7 Level: No effect at this spatial scale.

HUC-5 Level: No effect at this spatial scale.

9. Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependant species.

Site Level: Habitat for terrestrial riparian species might improve, with increased CWD on the ground, improved riparian vegetation, and improved connectivity within riparian areas. Habitat for aquatic species will improve due to reductions in fine sediment input.

HUC-7 Level: Habitat for riparian-dependant animals distributed across whole drainages would be maintained with protection of the Riparian Reserve network. Long term fire hazard reduction would also reduce the risk of a severe, stand-replacement fire. Such a fire could cause sharply increased peak flows and sediment levels and corresponding erosive downcutting in streams throughout a large area.

HUC-5 Level: No effect at this spatial scale.

Middle Applegate & Long Gulch nominated Areas of Critical Concern (ACEC)

Several ACEC nominations in the Middle Applegate have been put forth. The first nomination was received on April 23, 1992 (Long Gulch nominated ACEC, estimated at 967 acres). An additional nomination was received on August 12, 1999 (Middle Applegate nominated ACEC, estimated at 5,800 acres). The second nomination encompasses the original Long Gulch nomination from 1992. The 11,200 acre evaluation is in the EA file.

The evaluation for the initial nomination (April 23, 1992) of the Long Gulch ACEC started in January 1993 by the Medford BLM, Ashland ID Team. This evaluation was not timely enough to make it into the August 1992 Draft Medford Resource Management Plan (RMP). The nomination for the Long Gulch ACEC (967 acres) was found to have both relevance and importance, following the identification and standards for ACEC's in the BLM Manual 1613.1 (Long Gulch ID Team, 1/6/1993). Because of the timing, the recommendation at that time was to leave the area as 'proposed' and to wait until such time as an RMP ammendment could be done (Memo from Joan Seevers, May 4, 1999 on file Medford BLM). This has not happened to date, however the initial proposal and ID team review is still valid for the Long Gulch ACEC nomination.

A new review of the area(s) nominated, and analysis of the existing resource information has provided more detailed information on these nominations. The Middle Applegate ACEC nomination is for 5,786 acres, and includes 3,054 acres contained within the eastern portion of the proposed Ferris-Bugman project area in the Ball's Branch Creek and un-named creeks. The remaining 2,732 acres of the nominated Middle Applegate ACEC exists in Long Gulch (1,047 acres) and China Gulch drainages (1,684 acres), which are outside the Ferris-Bugman project area. This area also lies within the proposed John's Peak/Timber Mountain EIS. While the initial nomination (1992) for the Long Gulch ACEC was for 967 acres, following watershed and ownership boundaries, the Long Gulch watershed within contiguous BLM ownership is actually 1,047 acres.

Middle Applegate Nominated ACEC
The main features and values for which the Middle Applegate ACEC has been nominated (Calahan, 1999) are as follows. A review of this nomination was done on 6/12/2001 by the Ashland ID team, and their findings are outlined in the following points:

1. **5800 acres of contiguous BLM Lands.**
The nominated Middle Applegate ACEC is a 5,800 acre contiguous block of federal lands, however this is not a unique situation for BLM lands in the Applegate drainage, or the Ashland Resource area. Larger contiguous blocks are located in areas commonly named Star Gulch, Boat Mountain, Anderson Butte, and Cinnabar creek. Some of these areas are contiguous with U.S. Forest service lands, creating very large blocks of federal lands, far larger than this area.

This feature does not meet the relevance criteria for proposing an ACEC following BLM Manual 1613.1.

2. **Two of the four unroaded watersheds in the Ashland Resource area**.
The nominated ACEC area within the Ferris-Bugman project area, the Long Gulch and China gulch drainages all have existing roads, including a .4 mile access road in Long Gulch that is under permit to Mr. Calahan, an adjacent landowner who submitted the ACEC proposals. While the road density is very low, the area is not 'unroaded'. The proposed Ferris Bugman project will further reduce the road density, by decommissioning 0.9 miles of the 3.4 miles of road that occur in this portion of the nominated Middle Applegate ACEC. Approximately 0.6 miles of road exist in the China Gulch portion of the nominated ACEC. The nominated Middle Applegate ACEC has 4.4 miles of existing road, not counting the road along the northern boundary of the area. The low road density is a unique feature in the Ashland resource area, however as a basis for nominating an

ACEC under BLM Manual 1613.1, it does not have relevance. The area is not roadless.

3. **The largest unfragmented stand of low elevation old growth in the Applegate**
This statement was part of the original Long Gulch nomination (Calahan, 1992), and was echoed again in the Middle Applegate nomination (Calahan, 1999).

Following the BLM definition of 'old growth' (Medford RMP, 1995; Pacific Northwest Experiment Station Publications 447 and General Technical Report -285. It is defined as the stage which constitutes the potential plant community capable of existing on a site given the frequency of natural disturbance events. This stage exists from approximately age 200 until stand replacement occurs and secondary succession begins again. For purposes of inventory, old-growth stands on BLM-administered lands are identified if they are at least 10% stocked with trees of 200 years or older and are 10 acres or more in size. The late seral or mature age class Douglas-fir forests in this area generally are defined as having a component between 160 -190 years of age.

In the Ferris Bugman portion of the nominated ACEC (3,054 acres), only 335 acres (about 10%) is classified as Mature or Old growth. Under the Ferris-Bugman proposed project, owl core areas associated with mature stands are protected. Table below, illustrates the character of the Ferris-Bugman portion of the Middle Applegate nominated ACEC.

In China Gulch, the extreme eastern portion of the nominated ACEC, there are 1,685 acres, of which 184 acres are mature and old-growth forest (about 10%). There are 535 acres (32%) of mid-seral and pole stands, and 966 acres (58%) of oakwoodlands, brush and grass communities.

In the Long Gulch portion of the nominated Middle Applegate ACEC, the most recent vegetation data shows 300 acres (29%) containing mature & old growth forest, which is comparable to the original nomination report for the Long gulch ACEC (Calahan, 1992). Of this, approximately 90 acres contains stands meeting the true 'old growth' definition, mostly in T.38S., R.3W, Sec.18. Most of the old-growth trees are in a very narrow band within a few hundred feet of the creek. The majority of the area outside of the riparian area has very scattered 'old-growth' trees, and does not meet the definition of 'old growth'. Near the ridgetops there are virtually no old-growth trees, except for an occasional pine. As you move upslope out of the riparian area, there are about 209 acres of mature conifers (ages between 150 and 190 years of age), mostly in the upper reaches of the drainage. These stands are, for the most, part uneven-aged, of variable densities, and are not homogeneous stands. There are an additional 303 acres (28%) classified as mid-seral and pole conifer stands, and the remaining 444 acres (43%) in Long gulch are oak woodlands, brush and small grassland openings.

Table: Nominated Middle Applegate ACEC Vegetation Acres Classification by Area

BLM Vegetation Classification	China Gulch	Long Gulch	Ball ck/Ferris-Bugman portion	Total Acres
Brush	524.9	64.8	675.9	1,265.6
Grassland	30.3	42	1	73.3
Oak Woodland	405.8	337.1	1190.1	1,933
Seedling / Sapling	.3	0	44.1	44.4
Conifer Pole	159.6	106.5	187	453.1

Mid-seral	375.7	197.1	610.2	1,183
Mature & Old Growth	183.6	299.6	335.5	818.7
Unclassified	4.3	.1	10.5	14.9
Total	1684.5	1047.2	3054.3	5,786

A wide, contiguous old-growth forest does not exist in the nominated Middle Applegate ACEC. Scattered patches of mature and old growth conifers do exist in several areas, especially in the riparian area in Long gulch (See Botanical Survey information, Long Gulch proposed ACEC, 1992). Most of the area nominated Middle Applegate ACEC is dominated by mid-seral, pole and sapling conifers (1,680 acres), as well as a large component of oak woodland and brush (3,199 acres). The nominated Middle Applegate ACEC can be considered a typical, uneven-aged Applegate Valley forest with a few stringers and pockets of old-growth and mature forests, and a large component of mid-seral conifers, hardwoods, brush, and grasslands, but certainly not the largest unfragmented stand in the Applegate. In the Applegate Valley, stringers or pockets of old-growth trees are fairly common in riparian areas. For instance, Star Gulch is quite similar to Long Gulch except it is larger in size and the old-growth trees extend further up slope on the north aspect. The old-growth trees in Star Gulch are even older (some over 500 years of age), and have a wider age range (200 to over 500 years of age). In the Appleseed Vegetation Condition Maps for the Appleseed project, larger areas of mature, uneven-aged forest are shown in the Chapman/Keeler Creek drainage, Negro Ben Mountain area, Blue Mountain area, the Enchanted Forest area, and the adjacent section to the southeast. In the entire nominated Middle Applegate ACEC, there are 819 acres classified as mature and old growth, about 14% of the 5786 acres. These patches are scattered in several discrete pockets across the 5,786 acres.

This feature was found to have relevance in the Middle Applegate nominated ACEC, although it is not the largest remaining old growth in the Applegate. The nominated area contains one of the four 'relevance criterion' found in BLM Manual 1613.11 (A), which was a natural, relic old growth plant community. However, the 5,786 acre Middle Applegate nominated ACEC does not meet the criteria for importance for this value, with the exception of the Long Gulch drainage which was already evaluated in 1993. Excluding Long Gulch, the late seral communities are not unique or significant, and much is protected in owl cores, and wildlife corridors in the Ferris-Bugman portion of the area. Excluding the Long Gulch portion of the nomination, only about 10% of the area in the Ball's Branch, Kane creek (Ferris-Bugman project area) and China Gulch drainages is late-successional; this is not a unique or significant quality. In the Long Gulch drainage itself, late seral communities do make up a almost a third of the drainage. The late seral nature of Long Gulch drainage alone was found to have importance as an ACEC under the original evaluation of the Long gulch nomination in 1993, and a recent review concurred with that evaluation.

4. **Two pairs of mated spotted owls in the two primary watersheds** (i.e. Long Gulch and just over the ridge into Ball's creek drainage).

As part of the Northwest Forest Plan and BLM Resource Management Plan, spotted owl core areas were established around known spotted owl nests in 1994. The purpose of the owl cores are to provide suitable habitat for nesting owls and other late-successional species outside of the Late Successional Reserve (LSR) system. This provides wider distribution of spotted owl populations and increases genetic exchange between populations in LSRs. Two owl cores have been designated to protect the owl sites encompassed in the nominated Middle Applegate ACEC.

Wellington owl core (In the upper reaches of Ball's Branch)
This 100 acre site is in the nominated Middle Applegate ACEC in the upper reaches of Ball's Branch Creek. Surveys have occurred on site since 1991, and the last owl response was in 1998. Historically, a pair of owls have used this site. There were no sightings in the 2001 season after 3 surveys.

Deadhorse owl core (in Long Gulch)
This 100 acre owl core is in the Middle Applgate ACEC and in the original 1992 nomination for the Long Gulch ACEC. Surveys have occurred at the site since 1992. Spotted owls were observed nesting in 1992, and the last response was in 1994. There was no response in 2001 after 2 surveys.

The spotted owl habitat was found to have relevance and importance in the 1993 evaluation of Long Gulch nominated ACEC. This is as true today as it was then. Long Gulch, which is outside the proposed Ferris Bugman project area, does contains the Deadhorse owl core and spotted owl habitat. The Wellington owl core exists inside the proposed Ferris-Bugman project off Wellington Butte in the Ball's Branch Creek drainage, just over the ridge from the Deadhorse core.

This owl feature was found to have relevance in the Middle Applegate nominated ACEC as an important wildlife resource. This wildlife feature was also found to have importance, as it has qualities that make it fragile, and vulnerable to adverse change. The 100 acre Wellington owl core only makes up a very small percentage of the Ferris-Bugman portion of the nominated ACEC, and is protected from the proposed activity. The Long gulch portion has important owl habitat and an owl core area.

5. **'With the closing of a rutted mining road this entire area would be roadless'**.
(This is not an existing feature, it's a comment.) It has no relevance. See question #2. The nominated Middle Applegate ACEC, while it has a low road density, it is not roadless.

6. **Perennial streams in a number of locations.**
A number of the larger streams in the area are perennial, especially lower down the slopes closer to the Applegate River. Many drainages in Applegate and in the Ashland Resource area have perennial drainages. This feature is not unique and does not meet the relevance criteria for proposing an ACEC following BLM Manual 1613.1 (A).

7. **Resident steelhead and trout in Balls Branch.**
Stream surveys at the confluence of Ball's Branch with the Applegate River have found cutt-throat trout. Steelhead have been documented in the lower Ball's Branch on private land but not above the confluence on federal lands. Stream surveys have not documented cutt-throat trout in Balls Branch above the confluence on federal lands. Cutt-throat are documented in the Applegate river. This feature does not meet the relevance criteria for proposing an ACEC following BLM Manual 1613.1 (A).

8. **Refuge area for species that need undisturbed habitats... especially species associated with the mature and old growth forest areas**.
This is a very generalized statement, and could be applied to many areas containing patches of later seral habitats across federal lands (BLM and FS) in the Rogue Valley. Patches of later seral conifer communities do provide habitat for a number of species associated with them, including spotted owls (addressed above). The Survey and Manage species identified under the NW Forest Plan, as amended (January, 2001) identified numerous species of fungi, lichens, mosses, liverworts, vascular plants, molluscs, and vertebrates that are rare or uncommon, and that are associated with later seral habitats.

Several populations of rare plant species associated with the mature and old growth communities do exist in the Middle Applegate nominated ACEC area, including Long Gulch. A number of rare orchids, clustered ladies slipper (Cypripedium fasciculatum) and mountain lady's slipper (Cypripedium montanum), are found mostly associated with middle to late seral conifer communities, especially on northerly slopes and in the riparian reserves (see proposed Ferris Bugman Botany section). Populations in the proposed Ferris-Bugman project have been protected. The orchid occurrences in Long Gulch are associated with the mature and old growth conifer communities as well. Numerous other orchid sites are documented throughout the Applegate Valley, and in other areas on the Ashland Resource Area. There are over 500 occurrence records for the Medford District for these S&M species. Several former S&M fungi and lichen species (Otidea onotica and Lobaria halli), are documented in the Middle Applegate nominated ACEC as well. These species have not been found to be rare, and are not dependent on late seral conifer stands. Surveys have not documented any other occurrences of S&M species in the Middle Applegate nominated ACEC.

Disturbance however, especially fire, has likely played an important role in the distribution and abundance of Cypripedium orchids (NWFP, 1994, Appendix J-2). The mature and old growth patches are arguably communities that are 'undisturbed'. Fires within the last 200 years have repeatedly burned the Middle Applegate proposed ACEC, resulting in a mosaic of plant communities, including oak woodlands, brush, and patches of older conifers. Even in the areas of mature and old-growth conifers in Long Gulch, areas likely experienced a ground fire. Because of the topographic positions, aspects, and micro-climates, the severity was likely low and the older trees remained. Besides the spotted owl core areas (addressed above), and the orchids associated with the middle to late seral conifer communities, no other S&M species are documented in these later seral communities.

Several other Bureau Special Status species are documented in conifer communities, oak woodlands, chaparral, and rock outcrops, in the nominated area. (see Ferris Bugman EA wildlife and Botany sections), including several plants species, several bats, western bluebirds, and great-grey owls. The Applegate River in general, contains areas that have relativly high levels of species diversity, including species that are regionally 'rare' species, and some that are local endemics. The Middle Applegate nominated ACEC is not unique in this respect, other watersheds, and areas like the Cascade-Siskiyou National Monument, and serpentine communities have higher levels of species diversity or endemism. Other RNA's and ACEC's within the district have been established for rare species and rare plant communities (See Medford RMP, 1995).

• There is one location of the federally listed Fritillaria gentneri in the Ferris bugman portion of the nominated Middle Applegate ACEC, containing a small population of 2 plants. This site is in an oak woodland, and is protected in the proposed Ferris bugman project. There are over 40 occurrences for this species known on federal lands, many in the in the Applegate basin, around Jacksonville, near Merlin, Butte Falls, and in the Cascade Siskiyou National Monument. The nominated Middle Applegate ACEC is not unique with respect to the listed plant site.

This feature for the nominated Middle Applegate ACEC has relevance following BLM Manual 1613.11 9 (A). There is an important resource (rare species) within the nominated area. However, this feature does not have 'substantial significance' in order to satisfy the importance criteria following BLM Manual 1613.11 (B). The species present are not unique within the Ashland Resource Area, or the Medford BLM.

9. **Wildlife connectivity corridors linking the Rogue river area with the central Applegate.**
Wildlife connectivity is addressed in the proposed Ferris Bugman project. The Ferris Bugman project has two wildlife corridors designated within it, designed to protect connectivity within the watershed and between adjoining watersheds. The corridors were chosen in areas recommended in the Middle Applegate Watershed

Analysis (1995), based on their importance to connectivity. Two areas outside of riparian reserves in T38S R4W Sec.1 and T37S R4W Sec.33, have been identified as important wildlife connectivity corridors and have prescriptions designed to retain important habitat characteristics for this function. One of these is within the nominated Middle Applgate proposed ACEC. Treatment would include minimum canopy closure of 60 percent, retention of a minimum of four, 17"DBH or larger snags per acre (if available), existing understory brush would not be cut, and retention of all hardwoods larger than 10"DBH.

The Middle Applegate Watershed Analysis (1995), indicates a need in this watershed for maintaining late-successional forest connectivity on south and west facing slopes between watersheds. Within the Ferris-Bugman project area, connectivity is provided through a riparian reserve system, five one-hundred acre owl nest core reserves, two of which are in the nominated Middle Applegate ACEC, and two wildlife connectivity corridors. These reserves provide internal travel corridors and habitat areas within the project area and connectivity to the larger landscape outside the project area. The two wildlife connectivity corridors designated within the project are located in areas identified in the Middle Applegate Watershed Analysis as providing important connectivity to adjoining watersheds.

An overview of the larger scale landscape of which the Ferris-Bugman project is a part, reveals that the project area has the most late-successional forest connectivity at the north end of the Slagle Creek area, which is outside the nominated ACEC area. There is also a Late Successional Reserve (LSR) to the west of the watershed that provides a connectivity link between other late successional forests in adjacent watersheds.

This feature does not meet the relevance criteria for proposing an ACEC following BLM Manual 1613.1 (A).

10. "**Long Gulch has a unique trellised stream pattern...**"
This is a rare geologic feature, is unique, and was recognized in the initial 1993 evaluation of the Long Gulch nominated ACEC. It does meet the criteria following BLM Manual 1613.11 (A) (B) for relevance and importance, in the Long Gulch drainage. The rest of the nominated area (China Gulch and Ball's Branch Creek) has a typical dendritic patterned watershed, common in the Applegate and in the Rogue Valley, and does not meet the relevance criteria for proposing an ACEC following BLM Manual 1613.1.

11. ...**"This area has excellent potential to fill the ONH (Oregon Natural Heritage) plan cells for 'Dry Douglas-fir with Ponderosa Pine, Poision Oak, Honeysuckle, and Oregon Grape'. The large percentage of the late seral forest present, the unroaded nature of the watershed and the occurrence of several associated types of re-growth-response to historic fire makes this canyon and the associated areas to the west and east, the ideal location for an RNA for this cell." (As per the ACEC nomination, 1992).**
This quote from the Long gulch ACEC nomination in 1992 pertains to the Long Gulch area and is not indicative of the rest of the Middle Applegate ACEC nomination. This particular cell for this type is adequately represented in several ACECs and RNAs for the Klamath Mountains Ecoregion (Oregon Natural Area Plan, 1998) and is a low priority for representation. This plant association is quite common in the Applegate/Rogue Valley, and nominating this area to fill this RNA cell has no relevance following BLM Manual 1613.11 (A).

In addition, the nominated Middle Applegate ACEC has no relevant historic, cultural, or natural hazard values.

Recomendations: Middle Applegate ACEC
The features that have Relevance in the nominated Middle Applegate ACEC are:

1) Natural systems:
- About 14% of the entire nominated area has relic mature/old growth forests.

- A trellised watershed in Long Gulch, which is a rare geologic feature.

2) Wildlife / Rare Species Resource:
- Spotted owl habitat exists in association with the mature/relic old growth. Two 100 acres owl cores exist, one in Ball's Branch creek, and one in Long Gulch creek.
- Rare species are present in the area, namely the Survey and Manage lady's slipper orchids, and several Bureau Special Status wildlife and plant species.

The features described above that have Importance are:

1) Natural Systems:
- The relic mature/old growth forest for the entire 5,786 acre nominated area does not have importance. The percent of later seral forest is small (14%) and scattered in several areas. It is not unique. The Long Gulch portion of the nominated area does have importance. In this drainage, the relic stands make up about 30% of the area and are a single patch.
-The trellised watershed occurs only in Long Gulch. The rest of the area has a normal dendritic pattern. This feature does not have importance for the entire nominated area. It does have importance in Long Gulch drainage.

2) Wildlife / Rare Species:
- Spotted owls. This feature has importance following the definitions in BLM Manual 1613.11 (B). The owl habitat and core area especially within Long Gulch and across the ridge in Ball's Branch does have importance.
- Rare species (S&M and Bureau Special Status species). This feature, while relevant, is not found to have 'importance' following the definition in BM Manual 1613.11. The species present in the nominated area are not unique compared to other areas in the Applegate and the Ashland RA. Many other occurrences exist, including ones in established ACEC's and Research Natural Areas, and in Late Successional Reserves.

It is recommended that we deny the request to establish an 5,786 acres Middle Applegate ACEC.
While many of the features have relevance and one has importance (owl core), most of the features are associated with the Long Gulch drainage, and are not adequately represented or have importance throughout the nominated area.

Long Gulch proposed ACEC:
The 1993 recomendation by the Long Gulch ID team was to go forward to the Area Manager and recommend an ACEC in the Long Gulch drainage. The proposed Long Gulch ACEC is adjacent to the proposed Ferris Bugman project area, and within the proposed China Well project area. An additional review of this nomination on 6/12/2001 by an Ashland ACEC ID team, supported the initial review of the proposed ACEC in Long Gulch from 1993. The Long Gulch drainage was found to meet the Relevance and Importance criterion for the following values:

- Natural System: A relic mature and late successional Douglas-fir and Ponderosa Pine forest (299 acres). About 1/3 of this watershed contains a single patch of late seral forests which is significant.

- Wildlife / Rare Species resource: Populations and habitat of the listed spotted owl associated with the mature forests. The habitat including the owl core is significant. Other S&M and Bureau Special Status species occur in this drainage, although this feature is not unique in the surrounding area.

- A geologically unique, narrow, trellised watershed. This geologic feature is unique.

It is recommended that under the China Well proposed EA (2003), that Long Gulch ACEC be established.

Wildlife

Chapter 3
WILDLIFE

The plant communities and vegetative condition classes presented in the table below provide habitat for the terrestrial wildlife species found in the proposed Ferris-Bugman project area. Wildlife species that are representative of the various habitats are also shown. Approximately 235 vertebrate wildlife species are known or suspected to occur in the proposed project area. **Table X** lists representative species for the described condition classes.

Representative Wildlife Species

Condition Class	Representative Species
Grass, Forbes, herbaceous	Gopher snake, western meadowlark, California ground squirrel
Shrubs	Western fence lizard, wrentit, dusky-footed woodrat
Hardwood/woodlands	Ringneck snake, acorn woodpecker, western gray squirrel
Seedling/sapling	Northwestern garter snake, mountain quail, pocket gopher
Pole (5-11" DBH)	Southern alligator lizard, golden-crowned kinglet, porcupine
Large pole (11-21" DBH)	Ensatina, Steller's jay, mountain lion
Mature/old-growth (21+" DBH)	Northern spotted owl, Douglas' squirrel

Threatened/Endangered Species

The northern spotted owl, a species listed as threatened under the Endangered Species Act (ESA) of 1973, as amended, is present in the project area. There is also potential for the presence of bald eagles, listed as threatened under the ESA.

As part of the Northwest Forest Plan and BLM Resource Management Plan, spotted owl core areas were established around known spotted owl nests in 1994. The purpose of the owl cores is to provide suitable habitat for nesting owls and other late-successional species outside of the Late Successional Reserve (LSR) system. This provides wider distribution of spotted owl populations and increases genetic exchange between populations in LSRs.

Four 100 acre spotted owl core areas (that are managed as Late Successional Reserves under the Northwest Forest Plan) are located within the boundary of the Ferris-Bugman project. Four additional

spotted owl core areas are located adjacent to the project area.

There are approximately 1,903 acres of suitable spotted owl habitat and 1,992 acres of dispersal-only habitat on federally managed lands within the project area boundary. Suitable habitat includes nesting, roosting or foraging habitat and generally has the following attributes: high degree of canopy closure (approx. 60%+), multilayered canopy, presence of large snags and coarse woody debris. Dispersal-only habitat provides spotted owls some degree of protection from predators during juvenile dispersal and other movements, and generally has the following attributes: conifer stands with an average diameter of approximately ≥ 11 inches and 40-60 percent canopy closure.

Special Status Species

Special Status Species are those species that are federally listed as threatened or endangered, proposed or candidates for federal listing as threatened or endangered, or are BLM designated sensitive, assessment or tracking species. Special status species known or suspected to be present within the proposed project area and their status are as follows:

Special Status Wildlife Species

Species	Status[1]	Primary Reason(s) for Status
Western Pond Turtle (*Clemmys marmaorata*)	BS	Habitat loss/degradation, predation
California Mountain Kingsnake (*Lampropeltis zonata*)	BA	General rarity
Common Kingsnake (*Lampropeltis getultus*)	BA	General rarity
Northern Spotted Owl (*Strix occidentalis caurina*)	T	Timber harvest
Bald Eagle (*Hailaeetus leucocephalus*)	T	Shooting, pesticides, disturbance
Northern Goshawk (*Accipiter gentilis*)	BS	Timber harvest
Great Gray Owl (*Strix nebulosa*)	BS/SM	Timber harvest
Flammulated Owl (*Otus flammeolus*)	BA	Timber harvest
Northern Saw-whet Owl (*Aegolius acadicus*)	BA	Timber harvest

Species	Status[1]	Primary Reason(s) for Status
Pileated Woodpecker *(Dryocopus pileatus)*	BA	Timber harvest
Western Meadowlark (*Sturnella neglecta*)	BA	Development (residential and commercial)
Western Bluebird (*Sialia mexicana*)	BA	Development
Townsend's Big-eared Bat (*Corynorhinus townsendii*)	BS	General rarity, lack of information
Fringed Myotis (*Myotis thysanodes*)	BS	General rarity, lack of information
Long-eared Myotis (*Myotis evotis*)	BS	General rarity, lack of information, timber harvest
Yuma Myotis (*Myotis yumanensis*)	BS	General rarity, lack of information
Long-legged Myotis (*Myotis volans*)	BS	General rarity, lack of information, timber harvest
Pacific Pallid Bat (*Antrozous pallidus)*	BS	General rarity, lack of information

1/ Status:
T - Listed as threatened under the ESA
E - Listed as endangered under the ESA
BS - Bureau sensitive
BA - Bureau assessment
SM - Northwest Forest Plan Survey and Manage

Most of these species have been identified in the watershed or on immediately surrounding lands. Cameras placed in the adjacent Williams watershed have verified fisher (*Martes pennanti*) occurrence.

Survey and Manage Species

The amended Northwest Forest Plan ROD, Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines, Jan. 2001, provides extra protection for some species through Survey and Manage (S&M) standards and guidelines (S&Gs). The S&Gs provide protection for sites known to be occupied by the species, and for some species also directs that surveys be conducted in proposed project areas if the project is "ground-disturbing". In order to comply with the S&Gs, the proposed project area was surveyed for the following S&M species; Siskiyou mountains

salamander (*Plethodon stormi*), great gray owls *(Strix nebulosa)*, red tree voles (*Arborimus longicaudus*), and 3 species of terrestrial mollusks (*Helminthoglypta hertleini, Monadenia chaceana, and Pristiloma arcticum crateris*).

The results of the surveys follow:

- Siskiyou Mountains salamander - Suitable habitat present, to date, two known sites located
- Great gray owl - One nest site was located
- Red tree vole - No red tree vole nests found
- Mollusks - No S&M mollusk species were found.

Retention of Habitat Diversity

Although wildlife species richness is high, elements of habitat decline are present. A gradual loss of habitats such as oak savannahs, meadows, and brushfields has resulted from the exclusion of fire from the landscape. Grassy meadow habitat is less productive as wildlife habitat due to damage from cattle grazing and the encroachment of undesirable noxious weeds.

Most of the current early/seedling-sapling and pole habitat is the result of past timber harvest. Consequently, snags and coarse woody material are often lacking in these areas. Populations of species requiring snags and large coarse woody material have likely declined in these condition classes, while populations of species not requiring these components and associated with open areas and small trees have likely increased. Early successional species such as deer have benefitted from the increased forage base.

In the coniferous plant communities, snag density and down woody material is inadequate in much of the early seral and pole condition classes due primarily to past timber harvest. Fire suppression has contributed to some pole and mature conifer stands becoming more dense than they would have under natural fire regimes. The lack of intrastand structure in these stands generally results in lower species richness in comparison to other condition classes. The abundance of mature/old-growth habitat has declined due to past timber harvest.

Some species have been adversely affected by a general decline in their habitat within the watershed from historical levels. Loss or modification of habitat is probably most pronounced in the mature/old-growth condition class, and wildlife species associated with this habitat have likely been the most affected. Although supportive data are unavailable, the general decline in habitat condition probably has not resulted in a significant decrease in the number of wildlife species present. However, there has likely been substantial change in wildlife species abundance and distribution.

Connectivity

Connectivity refers to landscape-scale, interconnected forest areas that provide continuous forest habitat for wildlife species movement. Some of the species dependent on connectivity include special status species, game species, and invertebrates. This movement of individuals in the short term is essential to the movement of genetic material and the prevention of genetic isolation in the long term. Many forest species either cannot, or are reluctant to, move through large openings.

The Middle Applegate Watershed Analysis (1995), indicates there is a need in this watershed for maintaining late-successional forest connectivity on south and west facing slopes between watersheds. Within the project area itself, connectivity is provided through a riparian reserve system, five one-hundred acre owl nest core reserves, and two wildlife connectivity corridors. These reserves provide internal travel corridors and habitat areas within the project area and connectivity to the larger landscape outside the project area. The two wildlife connectivity corridors designated within the project are located in areas identified in the Middle Applegate Watershed Analysis as providing important connectivity to adjoining watersheds.

Landscape

An overview of the larger scale landscape of which the Ferris-Bugman project is a part, reveals that the project area has the most late-successional forest connectivity at the north end of the Slagle Creek area. There is also a Late Successional Reserve (LSR) to the west of the watershed that provides a connectivity link between other late successional forests.

Chapter 4

C. WILDLIFE

1. Alternative I - No Action

Direct, Indirect, and Cumulative Effects

Since no projects are planned under this alternative, disturbances and vegetative succession would occur naturally (except for fire suppression), and wildlife populations and distributions would change in response to these processes. Exclusion of natural fire regimes across the landscape would continue the trend toward loss of some plant communities within open pine, oak woodlands, and grasslands. This alternative would continue to facilitate a high fire-hazard.

2. Action Alternative II - Variable Prescriptions with Proposed Road Construction

Reduce the conifer density by thinning the vegetative profile (specified prescriptions) in management units across the landscape.

Direct Effects

General

The general effects of timber harvest and fire management activities on wildlife/wildlife habitat are discussed in Chapter 4, pages 51-65, and other portions of the BLM Medford District Resource Management Plan, October 1994. The effects that are more site/drainage area specific are addressed further in the following discussion.

Alternatives II and III are designed to produce habitat conditions similar to what might be present if fires had not been suppressed in the past. In order to accomplish the objectives that have been established for Alternative II, existing habitat conditions would be modified on approximately 1,800 acres of commercial forest land, 388 acres of thinning in non-commercial size forest, and 1,537 acres of non-commercial shrubland and oak-woodland would be treated. Approximately 37 percent of the "forest capable" stands present in the project area would be treated.

Due to the variety of conifer stand conditions in the project area, there are numerous prescriptions/marking guidelines, most with a primary goal of improving tree/stand vigor and growth. The treatments and the logging operations, however, would reduce canopy closure, which is an important stand feature for a number of the wildlife species (e.g., northern spotted owl) associated with mid and late-successional conifer stands. This would adversely affect these species. Conversely, species preferring or adaptable to open canopies and/or early seral conditions, e.g., great horned owl and mountain quail, respectively, would benefit from the harvest since a reduction in canopy closure should stimulate growth of herbaceous and other early seral vegetation.

The goals of the treatments for the non-commercial lands (shrubland/oak-woodland) are to reduce fire hazard, facilitate establishment of early seral vegetation, and curtail conifer encroachment. The prescribed treatments would provide a better distribution of the shrubland/ oak-woodland series within the project area. As with all habitat change, some species would benefit from these treatments, e.g., black-tailed deer (due to improved forage conditions) and others would be adversely affected, e.g., wrentit (due to the reduction in dense shrubs).

New Road Construction

Alternative II would treat 663 more acres than Alternative III due to increased logging access from new road construction. Three direct adverse effects on wildlife from new road construction and associated treatments would be 1) vehicle and human disturbance 2) fragmentation of habitat 3) increased short-term and long-term loss of suitable habitat for late-successional species such as the spotted owl. The benefits to wildlife of the density thinning treatments would be the reduction of fire hazard and the improvement of forest health, including the encouragement of large tree growth.

Based on an estimated 6 acres of permanent clearcut per mile of new road construction, the road construction that would occur under Alternative II would eliminate approximately 42 acres of the various habitat types present in the project area. Given the scale of the project, however, the quantity of habitat loss would be negligible. The greater impact of the road construction on wildlife would be associated with the long-term vehicular and human disturbance that could occur if the roads remain open to use after harvest or if the proposed barricades/gates are breached on a regular basis. Based on past experience, it is not safe to assume that the new roads will remain inaccessible to on-road vehicles. Some elements of the 4X4 public are very inventive, persistent, and successful in their efforts to circumvent BLM's efforts to keep roads closed with gates and other barriers. This assessment assumes that the roads will not remain blocked and will be open to public use most if not all of the time. Even if the blocks/gates keep full sized vehicles out, off-highway vehicles (OHVs) and motorcycles would use it to access ridge tops and develop links to existing trails in the area. Wildlife in general are sensitive to vehicular disturbance and harassment. The cumulative effect of many roads across the landscape is that habitat becomes fragmented and this is detrimental to wildlife.

The new road construction from the Foots Creek road system would be behind a locked gate. This gate is one of the most effective in the Resource Area. The private landowner in the area makes sure the gate is locked and not tampered with. It is probably safe to assume that the new road construction would remain inaccessible to on-road vehicles. The ridge line where the new construction would start is used extensively by OHV and the additional road construction could encourage additional OHV activity

farther south and closer to the "Enchanted Forest" area and it's resident spotted owls. The Enchanted Forest Trail is currently closed to OHV use and the new road construction could encourage the development of a link trail between the new road and the existing closed trail. Not building the road would reduce the potential for vehicular ORV disturbance of wildlife in the area, and reduce the potential for abuse of the existing Enchanted Forest Trail and nearby owl site.

Threatened/Endangered Species

Northern Spotted Owl

The northern spotted owl is listed as a threatened species under the auspices of the Endangered Species Act of 1973, as amended. Due to habitat modification that would occur under Alternatives II and III, BLM is required to formally consult with the U.S. Fish and Wildlife Service because the proposed actions would adversely affect northern spotted owls.

Alternative II would modify approximately 952 acres of suitable northern spotted owl habitat (i.e., nesting/roosting/foraging habitat) and 523 acres of dispersal habitat. Approximately 952 acres of the suitable habitat would be rendered unsuitable. Of this total, approximately 647 acres would be commercially thinned and is expected to again provide suitable habitat in 10-30 years if it remains unharvested for this period of time. In the interim, these acres would provide dispersal habitat. The remaining acres would be Pine, shaded fuel break, or regeneration treatments. Approximately 305 acres of suitable habitat with these prescriptions would provide neither suitable nor dispersal habitat in the long-term.

Approximately 310 acres of dispersal habitat to be harvested by the thinning prescriptions would retain dispersal habitat function after the harvest. Approximately 213 acres of dispersal habitat with Pine, shaded fuel break, or regeneration prescriptions would be lost as dispersal habitat in the long-term.

Effects of Alternative II on Northern Spotted Owl Suitable Habitat				
Existing Suitable habitat	Amount Suitable Treated	Loss of Suitable Habitat	Amt. Treated which Becomes Dispersal Habitat	Amt. Treated Loss as Suitable or Dispersal
1,903 ac.	952 ac. (50%)	952 ac. (50%)	647 ac. (34%)	305 ac. (16%)

Effects of Alternative II on Northern Spotted Owl Dispersal Habitat			
Existing Dispersal Habitat	Amount Dispersal Treated	Amt. Treated Remains Dispersal Habitat	Loss of Dispersal Habitat
1,992 ac.	523 ac. (26%)	310 ac. (15%)	213 ac. (11%)

The habitat loss described above is expected to adversely affect the ability of spotted owls within and adjacent (within 1.3 miles) to the project area to successfully reproduce and would result in the "incidental take" of these owls. Formal consultation with the U.S. Fish and Wildlife Service is pending

for timber sales in the project area that will be sold in fiscal years 2001-2003. The mandatory terms and conditions of the Biological Opinion (BO) will require the implementation of project design criteria that will be proposed in the pending Biological Assessment for Rogue River/South Coast FY 2001-2003 Timber Sale Projects (BA). These criteria will be incorporated in the design of the timber sales. Upon completion, the BA and BO will be available for review at the Medford BLM Office.

Special Status Species

Special Status Species (SSS) are those species that are federally listed as endangered (FE), threatened (FT), proposed (FP), or candidate (FC), or that the Oregon State Office of BLM (OSO) lists as sensitive (BS) or assessment species (BA). The OSO also maintains a list of "tracking" species as part of the SSS program, but for management purposes these species are not considered to be SSS (Special Status Species Policy for Oregon and Washington, 1991).

Alternative II would adversely affect special status species in both the short and the long term, due to the overall change in stand structure, specifically the reduction in canopy closure and snags. Those species which are likely to be most affected by the reduction in canopy closure are northern spotted owl, northern goshawk, and great gray owl. Species that would be the most affected by the reduction in snags within the forested matrix are the pileated woodpecker and northern saw-whet owl.

The following are SSS known to be present in the project area and would be adversely affected by the proposed projects: northern spotted owl (FT), long-legged myotis (BS), fringed myotis (BS), Yuma myotis (BS), western bluebird (BA), pileated woodpecker (BA), and great gray owl (BA). Also, under the auspices of the NWFP, the great gray owl is a Survey and Manage species.

All species would be adversely affected due to the overall change in stand structure, specifically the reduction in canopy closure and/or snag density in the mixed conifer plant community. All of the species would be affected in their ability to feed, breed and shelter. The NWFP, however, provides some degree of site specific mitigation for these species through the implementation of appropriate Standards and Guidelines. Impacts to the bat species would be mitigated somewhat by the retention of modest numbers of snags. Impacts to northern spotted owls and great gray owls would be mitigated by the retention of core areas around nest sites/activity centers. Retention of modest numbers of snags would also mitigate impacts to western bluebirds.

Survey and Manage Species

Great gray owl

Nesting habitat for this species is typically mature/old-growth forest which is adjacent to meadows or clear-cuts used for foraging habitat. To date, one great gray owl nest site has been located in the project. All nest sites found prior to the sale date would each receive approximately 125 acre protection zones, in accordance with ROD, SEIS, and RMP guidelines.

Mollusks

No survey and manage mollusks have been found in the project area. Any Survey and Manage mollusk species which are located would receive protection as outlined in the Management Recommendations for

Survey and Manage Terrestrial Mollusks, version 2.0, dated, Oct., 1999.

Indirect Effects

Proposed road construction under Alternative II would eliminate approximately 42 acres of the various habitat types present in the project area. The roads, however, would be routed to avoid sensitive wildlife areas. In relation to the size of the project, the loss of this amount of habitat would be a minor impact to wildlife. A greater impact would be the long-term disturbance that could occur if the barricades/gates proposed for the roads are breached on a regular basis.

Other indirect effects associated with the proposed project, such as site preparation or planting, would have only minor impacts on wildlife because these actions would occur in areas already disturbed by the major actions, i.e., timber harvest or brushland/oak-woodland treatment.

3. Alternative III - Variable Prescriptions with No New Road Construction

Direct Effects

Threatened/Endangered Species

Northern Spotted Owl

Without new road construction, several treatment areas would be dropped due to lack of logging access. This would result in dropping 633 acres from the planned treatments. The amount of suitable spotted owl habitat loss would be reduced by approximately 432 acres. The total suitable habitat loss in the project area for Alternative III would be 520 acres (27%), in contrast to 952 acres (50%) under Alternative II.

Alternative III would limit disturbance to nearby owl cores caused by the additional people, vehicles, ATVs, and trail bikes associated with increased access to the forest from roads. Roads reduce and fragment wildlife habitat, causing a detrimental cumulative effect as more are added. Fragmentation adversely affects wildlife species such as the spotted owl which are dependent on late successional habitat.

The trade-off that would result from dropping 633 acres of treatment from the project, is that fire hazard would remain high, and forest health would not be improved through treatments in those areas. One objective of density thinning is to encourage the growth of large trees, which would result in a long-term benefit to late-successional wildlife species if additional harvests do not occur.

Effects of Alternative III on Northern Spotted Owl Suitable Habitat				
Existing Suitable habitat	Amount Suitable Treated	Loss of Suitable Habitat	Amt. Treated which Becomes Dispersal Habitat	Amt. Loss as Suitable or Dispersal
1,903 ac.	520 ac. (27%)	520 ac. (27%)	318 ac. (16%)	202 ac. (11%)

Effects of Alternative III on Northern Spotted Owl Dispersal Habitat			
Existing Dispersal Habitat	Amount Dispersal Treated	Amt. Treated Remains Dispersal Habitat	Loss of Dispersal Habitat
1,992 ac.	344 ac. (17%)	228 ac. (11%)	116 ac. (6%)

Special Status Species

Alternative III would limit disturbance to wildlife caused by the additional people, vehicles, OHVs, and trail bikes associated with increased access to the forest from roads. Roads reduce and fragment wildlife habitat, causing a detrimental cumulative effect as more are added. Fragmentation adversely affects special status species such as the spotted owl, great gray owl, and goshawk which are dependent on late successional habitat.

The trade-off that would result from dropping 633 acres of treatment from the project, is that fire hazard would remain high, and forest health would not be improved through treatments in those areas. Under this Alternative, there would be a loss to late-successional wildlife species of the benefit of encouragement of large tree growth that would result from the thinning treatments.

Survey and Manage Species

The mitigating measures, project design features, and surveys for NWFP ROD Survey and Manage species referred to in Alternative II, would also apply to Alternative III.

Indirect Effects

Any indirect effects associated with the proposed project, such as site preparation or planting, would have negligible impacts on wildlife, and the project design features would further minimize any of these impacts.

Cumulative Effects Wildlife - Ferris-Bugman EA

Cumulative effects are defined as the collective environmental impacts of all past, present, and reasonably foreseeable future actions taking place in the affected area. For this analysis the affected area is defined as the Middle Applegate watershed. The Middle Applegate Watershed Analysis (1995), identifies past actions that have had negative cumulative effects on some species of wildlife to include timber cutting, mining activities, trapping and bounty hunting, and road building on federal and private lands. Timber management practices were usually to clearcut forest stands. This resulted in fragmentation of the forest landscape and loss of habitat for forest dependent species. The exclusion of fire caused a trend toward the loss of some habitat types such as grassy meadows, open pine stands, and oak woodlands. Since World War II, timber harvest, fire suppression, and residential developments have exerted the greatest influence on wildlife in the watershed.

There are approximately 16,500 acres of suitable spotted owl habitat in the Middle Applegate watershed. In 1994, the Northwest Forest Plan established system of Late Successional Reserves (LSR) to preserve

late successional forest habitat for wildlife species such as the spotted owl, which are dependent on this type of habitat. These large preserves have had a positive effect on overall wildlife habitat conditions and connectivity between late successional forest stands. The closest LSR to the Ferris-Bugman project area is to the west of Ferris Gulch. Within the Middle Applegate watershed, approximately 6,300 acres are protected in LSRs or other no-treatment designations.

There are 46,884 acres of federal land in the Middle Applegate watershed area, of which the Ferris-Bugman project is a part. In the last five years, approximately 6,500 acres have been treated in the Middle Applegate watershed. In the foreseeable future, approximately 3,000 acres are planned for treatments on federal land in this watershed during the period from 2001 through 2006. Of that amount, approximately **XXXX** acres are planned as pine, regeneration, or mistletoe prescriptions, which may result in canopy closure less than 40 percent. Canopy closure less than 40 percent is too open for spotted owl dispersal and would also have detrimental effects to some other species of wildlife. Although the quantity of spotted owl habitat is reduced in the short-term, the overall quality of habitat is expected to improve over the long-term due to these projects.

In the long-term, density thinning treatments are expected to improve forest health, encourage late successional characteristics, and reduce fire hazard. Treatments are designed to make it possible to reintroduce prescribed fire into the ecosystem. When fires do occur in treated stands, they would be less severe. The long-term effect of thinning and the reintroduction of fire is to move the forest landscape toward larger trees and healthier forests.

The exclusion of fire has resulted in a loss of habitat diversity across the landscape from historic conditions. Special habitats such as meadows, oak woodlands, open pine stands, and other plant communities have been declining due to lack of fire. Treatments are designed to improve forest health and restore habitats to historic conditions. In the long-term, overall species richness will improve with the retention of habitat diversity.

Projects will result in a loss of snags, which will have detrimental effects on cavity nesters such as woodpecker species. Most of the large snags are retained in treatment areas to help mitigate this effect.

<u>Cumulative Effect of Alternative II - Variable Prescriptions with New Road Construction</u>
See Alternative II direct effects listed above.

<u>Cumulative Effect of Alternative III - Variable Prescriptions with No New Road Construction</u>
See Alternative III direct effects listed above.

<u>Cumulative Effect of Alternative I - No Action</u>
The cumulative effect to wildlife of no action would be that disturbances and vegetative succession would occur naturally (except for fire suppression), and wildlife populations and distributions would change in response to these processes. Exclusion of natural fire regimes across the landscape would continue the trend toward loss of some plant communities within open pine, oak woodlands, and grasslands. This alternative would continue to facilitate a high fire-hazard.

Appendix W 15% Late-Successional Habitat Retention

The Ferris-Bugman project area lies within the Middle Applegate "fifth field" watershed. The Northwest Forest Plan provides direction to retain 15% of the federal forest land in each fifth field watershed in late successional forest conditions. In accordance with this direction over 6,300 acres of the late-successional stands on BLM managed lands in the Middle Applegate Watershed were designated for retention.

The interdisciplinary team reached consensus on the process to be used to identify, evaluate, and prioritize 15% late-successional forest stands. The process involved a series of cumulative steps that proceeded until sufficient acres were identified. The stands selected for retention were mapped and withdrawn from near-term treatment consideration.

Reserve Identification Process

Analysis Criteria

A. The analysis was conducted at the 5th field watershed scale.
B. The number of acres targeted for retention was calculated based on the total federally managed forest-capable acres in the watershed.
C. McKelvey habitat types I and II were generally assigned the highest priority for retention. These habitat types were spotted owl nesting quality habitat and spotted owl roosting/foraging quality habitat, respectively. Stands that were partial cut harvested under the Lower Thompson, Middle Thompson, and Hinkle Gulch projects were not considered for inclusion in the 15% retention acres.

Retention Sequence

1st Acres assigned a McKelvey habitat rating I or II already reserved for owls (great gray owl and spotted owl 100-acre cores).
2nd Acres with a McKelvey habitat rating I or II already reserved for Survey and Manage species, such as salamanders and/or special status plants.
3rd Acres reserved to meet Aquatic Conservation Strategy objectives and assigned a McKelvey habitat rating I or II. These are full width Riparian Reserves, which occur in stands meeting habitat quality I or II.
4th Stands already reserved for salamanders, owls, and plants that are not McKelvey habitat I or II but are older than 80 years.
5th Riparian Reserve stands that are not McKelvey habitat I or II but are older than 80 years.
6th Acres assigned McKelvey habitat rating I and II elsewhere in the watershed. These acres were prioritized by the interdisciplinary team giving consideration to such needs as connectivity, fragmentation, location, etc.

This process is not strictly in conformance with the latest guidance on how to identify the 15% retention acres; however, it was in conformance with the current guidance at the time the analysis was performed and as such, it is considered a valid approach "grandfathered in" under the latest guidance.

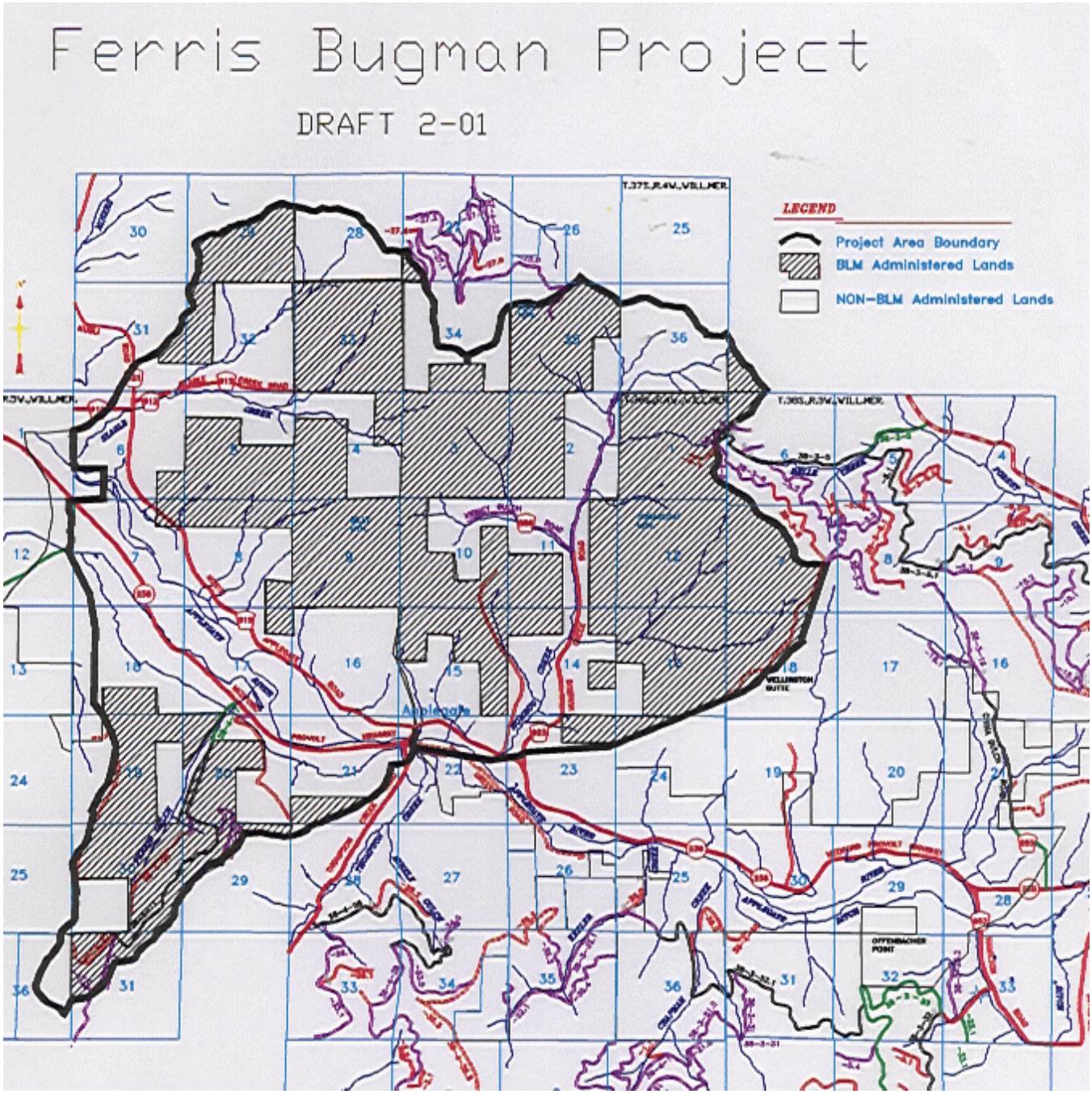
Employing the latest guidance would not have changed the target acreage figure. However, it is estimated that several hundred acres currently designated for retention would have been left out, and an equal number of acres currently not designated for retention would have been retained.

The target acreage for the BLM portion of the Middle Applegate 5th field watershed was 6,100 acres. The actual designated reserve of late successional habitat is over 6,300 acres.

The USFS ownership in this watershed is relatively minor and their calculated contribution target was 300 acres. They have identified 360 acres of late successional habitat for retention on their ownership. The identification of stands in the upper Thompson Creek area where USFS and BLM lands adjoin was a cooperative effort in order to ensure that the pattern of retained acres in the area made sense ecologically.

Maps of the BLM and USFS acres designated for retention in the Middle Applegate 5th field watershed are available at the Medford District BLM Office. The maps are kept in the Appleseed EA file and in the watershed analysis document for the Middle Applegate watershed.

Map


Ferris Bugman Project
DRAFT 2-01
LEGEND
Project Area Boundary
BLM Administered Lands
NON-BLM Administered Lands
Applegate
WELLINGTON BUTTE
OFFENBACHER POINT